PB90-122672

Superfund Record of Decision (EPA Region 4)
Aberdeen Pesticide/Fairway Six, NC
(First Remedial Action), June 1989

(U.S.) Environmental Protection Agency, Washington, DC

30 Jun 89

U.S. Department of Commerce
National Technical Information Service
NTIS

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R04-89/047
June 1989

PB90-122672

EPA

Superfund Record of Decision:

Aberdeen Pesticide/Fairway Six, NC

50272-101

REPORT DOCUMENTATION PAGE

1. REPORT NO. EPA/ROD/R04-89/047

2\.

3. Recipient's Accession No. PB90 122672/AS

4. Title and Subtitle

SUPERFUND RECORD OF DECISION
Aberdeen Pesticide Dumps/Fairway Six, NC
First Remedial Action

5. Report Date 06/30/89

6\.

7. Author(s)

8. Performing Organization Rept. No.

9. Performing Orgainization Name and Address

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.

(C)

(G)

12. Sponsoring Organization Name and Address

U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

13. Type of Report & Period Covered 800/000

14\.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Aberdeen Pesticide Dumps/Fairway Six site is a former disposal area in Moore County, North Carolina, approximately 1.6 miles west-northwest of Aberdeen. The site is in a rural area, on the property of Partners in the Pits, LTD and Yadco of Pinehurst Inc., and bounded on the south by a railroad, on the north by the sixth fairway of the Pit golf course, and on the east and west by undeveloped property. Although the rural area is sparsely populated, residential growth is expected in the near future. In August 1984 the State was alerted that pesticides had been disposed of at and around the site for a number of years. A State inspection revealed that soil and debris were contaminated with pesticides. In June 1985 EPA initiated an emergency response action to excavate and remove onsite contaminated surface soil and two buried trenches. The soil and debris were disposed of offsite. In 1986 pesticides were detected in drinking water from four municipal wells and three private wells in Aberdeen causing EPA to reinvestigate the site. A subsequent investigation identified additional trenches containing approximately 12 million pounds of pesticide wastes. A test burn, conducted in December 1986, incinerated 12,000 pounds of pesticide-contaminated soil and debris using a mobile incinerator. Residual ash was stored onsite in twenty-seven 55-gallon drums. Additional removal funding was provided to excavate, shred, screen, and stockpile approximately 22,000 yd^3 of pesticide-contaminated materials. The
(See Attached Sheet)

17. Document Analysis a. Descriptors

Record of Decision - Aberdeen Pesticide Dumps/Fairway Six, NC
First Remedial Action
Contaminated Media: soil, debris
Key Contaminants: pesticides

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement

19. Security Class (This Report) None

20. Security Class (This Page) None

21. No. of Pages 93

22. Price

(See ANSI-Z39.18) *See Instructions on Reverse* OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

16. Abstract (Continued)

predominant contaminants of concern affecting the soil and debris are chlorinated organo-pesticides.

The selected remedial action for this site includes excavating and homogenizing stockpiled pesticide-contaminated wastes; treating homogenized wastes in an onsite, mobile thermal treatment facility and reinjecting process wastewater or scrubber blowdown into the thermal treatment facility; analyzing ash to demonstrate ash is nonhazardous; monitoring air emissions; and redisposing residual ash onsite. The estimated present worth cost for this remedial action is $14,533,000. There are no annual O&M costs associated with this remedial action.

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

FAIRWAY SIX DISPOSAL SITE
MOORE COUNTY, ABERDEEN, NORTH CAROLINA
OPERABLE UNIT TWO

PREPARED BY:
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV
ATLANTA, GEORGIA

RECORD OF DECISION

Remedial Alternative Selection

SITE NAME AND LOCATION

Fairway Six Disposal Site (Operable Unit Two)
Aberdeen, Moore County, North Carolina

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Fairway Six Disposal Site, in Aberdeen, North Carolina, developed in accordance with CERCLA, as amended by SARA, and, to the extent practicable, the National Contingency Plan. The following documents form the basis for selection of the remedial action:

- Administrative Record
- Feasibility Study Report
- Summary of Remedial Alternative Selection
- Responsiveness Summary
- Staff Recommendations and Reviews

DESCRIPTION OF THE REMEDY

This remedy is the first remedial action for the site. The function of this remedy is to reduce the risks associated with exposure to contaminated on-site soils.

The selected remedy includes:

Incineration of (previously excavated and stored) contaminated soil and debris, confirmatory analysis of incinerator ash and onsite disposal of incinerator ash.

DECLARATION

The selected remedy is protective of human health and the environment, attains requirements that are applicable or relevant and appropriate, and is cost effective. By authorizing the thermal destruction of contaminated soil and debris, this remedy satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principle element and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. Because this remedy will not result in hazardous substances remaining on-site above health-based levels, the five-year facility review will not apply to this section.

Lee A. DeHihns III, for
Greer C. Tidwell
Regional Administrator

6/30/89
Date

TABLE OF CONTENTS

Section Page

1.0 Site Name, Location, and Description 1

2.0 Site History and Enforcement Activities 1

2.1 Site History 1
2.2 Enforcement Activities 5

3.0 Community Relations History 6

4.0 Scope and Role of Operable Unit Within Site Strategy 7

5.0 Summary of Site Characteristics and Risks 7

5.1 Site Characteristics 7
5.2 Site Risks 12

6.0 Alternatives Evaluation 15

6.1 Description of Alternatives 19
6.2 Summary of Comparative Analysis of Alternatives 25

7.0 The Selected Remedy 27

8.0 Statutory Determinations 30

8.1 Protection of Human Health and the Environment 30
8.2 Attainment of ARARs 30
8.3 Cost Effectiveness 30
8.4 Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable 31
8.5 Preference for Treatment as a Principal Element 31

Attachments

1 Responsiveness Summary
2 State Concurrence
3 Adminstrative Record Index

FIGURES AND TABLES

Figure | Page

Figure 1. Site Location.. 2
Figure 2. Site Layout.. 4

Table

Table 1. Major Laboratory Results For 1988 Emergency Response Action.. 9
Table 2. Major Laboratory Results from June 1989 Sampling of the Fairway Six Stockpile.............................. 10
Table 3. Properties and Environmental Mobility/Fate of Site Contaminants.. 11
Table 4. Environmental Exposure Criteria......................... 14
Table 5. Remedial Technology Alternatives That Passed Initial Screening.. 17
Table 6. Comparative Analysis of Alternatives Against The Nine Criteria... 26
Table 7. Estimated Cost Summary For The Selected Remedy......... 29

Decision Summary
Fairway Six Disposal Site
Operable Unit Two

1.0 Site Name, Location, and Description

The Fairway Six Disposal Site is located in Moore County, North Carolina approximately 1.6 miles west-northwest of the town of Aberdeen corporate limits in a rural, sparsely populated area (Figure 1). The site is situated off NC Highway 5 west on the property of The Pit Golf Links, Aberdeen, North Carolina. The site is bounded on the south by the Aberdeen and Rockfish Railroad, on the north by the sixth fairway of "The Pit" Golf Links, and on the west and east by undeveloped property. Although no residents live within 0.2 miles of the site, home lots on the perimeter of the adjacent golf course are now being sold, and residential growth is expected in the very near future.

The site is situated on flat terrain. Regionally, the topography is gently rolling and sloping downward to the north to an unnamed creek. The creek discharges via a water impoundment about 2000 feet northeast of the site to Aberdeen Creek upgradient from Pages Lake. Soils in the area consist of a highly permeable sandy loam of very low clay content.

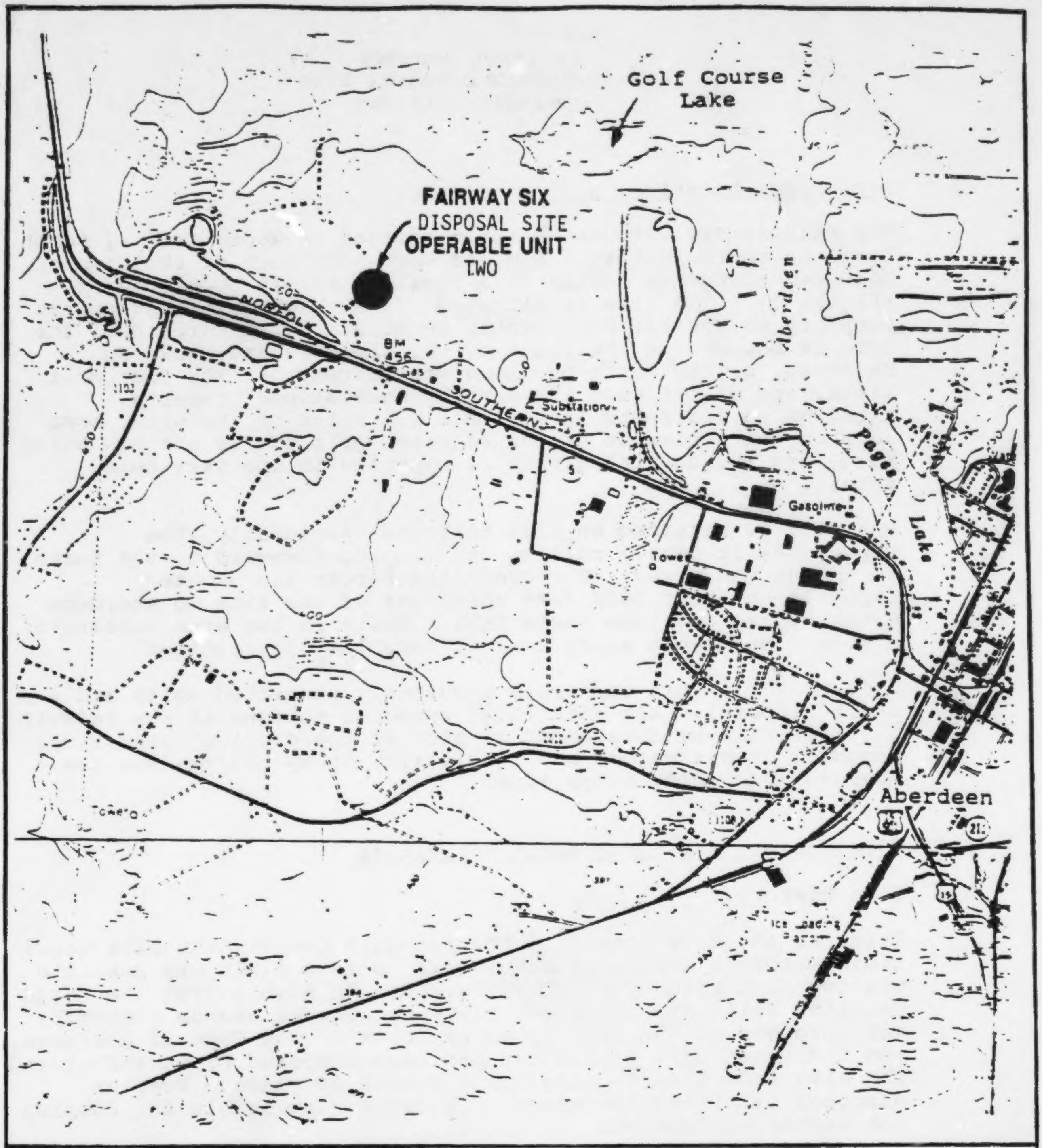
This operable unit addresses previously excavated soils and their disposal. Any additional remedial actions at the Fairway Six Site will be determined as part of the ongoing (area wide) Remedial Investigation and Feasibility Study (RI/FS) for the Aberdeen Pesticide Dumps site.

2.0 Site History and Enforcement Activities

2.1 Site History

Prior to the development of The Pit golf course, the site was a field within a wooded area. Access to this field was possible via two dirt roads from NC Highway 5. In August 1984 the North Carolina Solid and Hazardous Waste Management Branch (NCSHWMB) was informed of the site by an employee of the Town of Aberdeen, who indicated that pesticides had been disposed of at and around the site from time to time for a number of years. Precise disposal dates and the names of persons responsible for dumping the wastes are unknown.

On October 22, 1984, personnel of the NCSHWMB conducted an investigation at the Fairway Six Site. During the investigation, household rubbish, old car parts, etc., were observed within the site vicinity. The general area, therefore, is believed to have served as a trash dump for many years prior to the construction of the golf course. Records of waste


Golf Course Lake
Creek
FAIRWAY SIX
DISPOSAL SITE
OPERABLE UNIT
TWO
NORFOLK
SOUTHERN
BM 456
Gas
Substation
Aberdeen
Pages
Lake
Gasoline
Tower
Aberdeen
Creek
1102
1108
5
15
211
Ice Loading Platform

AEP [illegible]

Feasibility Study
Fairway Six Waste Pile Operable Unit
Fairway Six Pesticides Dump Site
Aberdeen, Moore County, NC

EPA W[illegible] REM V Contract #68-01-7400

EPA Work Assignment No. [illegible]

Figure 1
Site Location

8

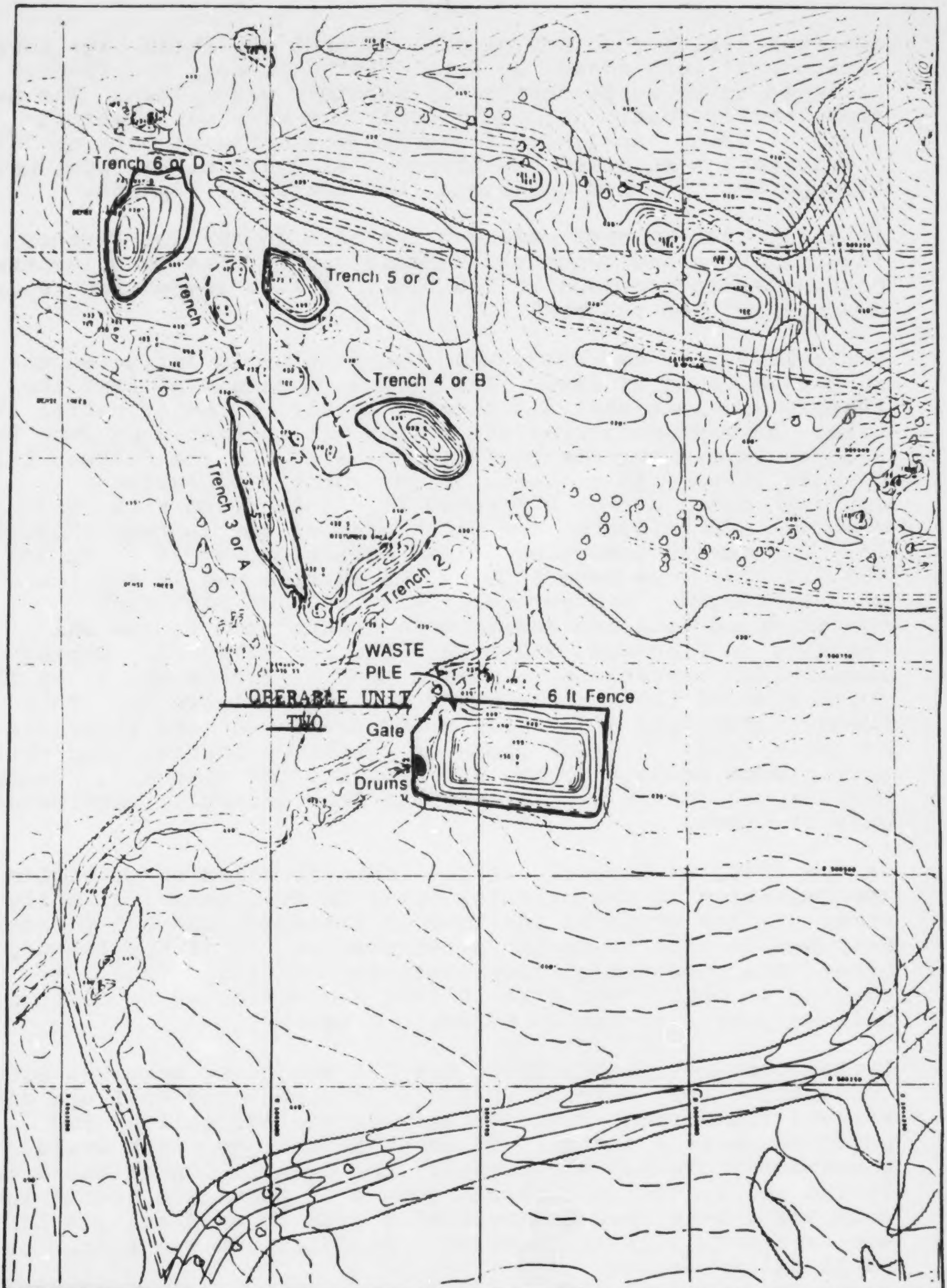
disposal activity do not exist. Several pesticide bags labeled "toxaphene" were noted, as were colored powders and fines believed to be waste chemicals, possibly pesticides. The most prevalent indication of pesticides, however, was a strong chemical odor. Analysis of samples collected as part of this investigation revealed the presence of 2,253 mg/kg (ppm) DDT, 573 ppm DDD, 601 ppm toxaphene, and traces of lindane.

In April 1985 NCSHWMB referred the site to EPA for further investigation and requested remedial activities to alleviate contamination problems at the site. A site inspection report accompanied the referral.

EPA's Region IV Emergency Response Section investigated the site in May and June of 1985. Analytical results confirmed the State's previous analysis showing pesticide contamination at the site. An emergency response action was initiated on June 25, 1985 to remove surface soil contamination at the Fairway Six Disposal Site. In addition to the identified surface contamination, a trench (Trench No. 1) 80' long x 20' wide x 15' deep was identified on the north side of the fairway (Figure 2). The buried trench contained pesticide levels of up to 100,000 ppm. The materials on the surface and in the trench were excavated. Sixty-three truck loads of pesticide contaminated soil and debris were transported to the GSX Facility in Pinewood, South Carolina for disposal. During site restoration operations, a second trench (Trench No. 2) on the south side of the fairway was discovered (Figure 2). This trench, 150' long x 35' wide x 10' deep, was also excavated and an additional 100 truck loads of pesticide contaminated soil and debris were shipped to the GSX Facility for disposal. Emergency Response action at the Fairway Six Site initially terminated on July 16, 1985.

In May 1986, as a result of the identification of pesticide contamination in the drinking water in four municipal wells and three private wells in the town of Aberdeen, the EPA Emergency Response Section conducted a reinvestigation of the Fairway Six Site. The geophysical investigation identified Trench No. 3 ranging in depth from 4 to 10 feet and estimated to contain 12 million pounds of pesticide waste (Figure 2).

During December 10-12, 1986, the EPA Emergency Response Section conducted a test burn of pesticide contaminated soil and debris removed from Trench 3 to demonstrate the reliability and performance of a thermal treatment technology which would permanently destroy and detoxify the organic contaminants found in the soil. Twelve thousand pounds of pesticide containing soil and debris were incinerated onsite in an 8-million BTU mobile rotary kiln incinerator. Residual ash was stored on site in 55 gallon drums.


Trench 6 or D
Trench
Trench 5 or C
Trench 4 or B
Trench 3 or A
Trench 2
WASTE PILE
OPERABLE UNIT TWO
6 ft Fence
Gate
Drums
NORTH
SCALE 0' 100'

AEPCO

Feasibility Study
Fairway Six Waste Pile Operable Unit
Fairway Six Pesticides Dump Site
Aberdeen, Moore County, NC

EPA/WR&J REM V Contract #68-01-7403

EPA Work Assignment No. 04-4LK7

AEPCO Project No. 1200-4504

Figure 2
Site Layout

10

An EPA Technical Assistance Team conducted a second geophysical investigation at the site on March 10, 1987 and identified Trench No. 4 (Figure 2).

In October 1987 the EPA Region IV Emergency Response Section requested additional funding to excavate and stockpile the pesticide contaminated soil and debris (Trenches 3 and 4) that remained at the Fairway Six Site, and to stabilize the site until funds became available for final disposal either by incineration or another viable alternative.

Additional funding was approved on January 15, 1988; and on August 2, 1988, an EPA removal contractor mobilized to the site to begin excavation of the remaining known pesticide burial trenches (Trenches 3 and 4). During this trench excavation and sampling effort, two additional pesticide waste trenches (Trenches 5 and 6) were identified (Figure 2).

After the excavation of the trench material, the pesticide contaminated soil and debris were shredded, screened and stockpiled on a 30-mil PVC base liner. A top 30-mil PVC liner was installed and chemically affixed to the bottom liner. The dimensions of this screened soil pile are 215' long x 110' wide x 28' high, containing approximately 22,000 cubic yards of pesticide contaminated soil and debris. This calculates to approximately 27,500 tons or 55 million pounds.

A surface water diversion ditch was constructed around the stockpile to prevent offsite runoff from coming into contact with the stockpile. The ditch discharges runoff toward the north to a natural swale. The stockpile is enclosed by a 6 foot high chain-link fence. Approximately 27 drums of residual ash, resulting from the 1986 test burn activities, are located near the southwest corner of the stockpile inside the fence. Two piles of unscreenable materials under a tarp are located near the drum storage area within the fence. This second removal action terminated on October 5, 1988.

2.2 Enforcement Activities

The Aberdeen Pesticide Dumps Site was proposed for inclusion on the National Priorities List (NPL) in January 1987 and became final on the NPL in March 1989. A potentially responsible party (PRP) search conducted in 1985 identified several PRP's. On May 15, 1985 and September 30, 1985 EPA notified potentially responsible parties of the conditions at the site and their potential liability for the costs of remedying such conditions. Certain information was also requested of the PRPs. The notified PRP's were also invited to participate in a removal action at the site. None of the PRP's indicated any inclination to participate in a removal of the hazardous substances from the site.

On April 13, 1987 EPA sent special notice letters to four identified PRPs, and requested voluntary performance of a

RI/FS to abate any release or threatened release of hazardous substances. None of the PRP's notified agreed to perform the requested work.

The Department of Justice (DOJ) filed a lawsuit on behalf of EPA Region IV against five defendants on March 31, 1989, persuant to CERCLA Section 107. The suit is docketed as Civil Action No. C-89-231-R and was filed in the U. S. District Court for Middle District of North Carolina, Rockingham Division, Greensboro, North Carolina.

3.0 Community Relations History

Community Relation activities have remained an important aspect throughout the removal actions conducted at the site and the ongoing remedial investigation and feasibility study process. On March 12, 1987 a public meeting was held at the Aberdeen Middle School in Aberdeen, North Carolina to present to the citizens and local officials of Aberdeen the results of the December 1986 incinerator test burn. Prior to the August 1988 removal action, an availability session was held on July 18, 1988 at the Aberdeen Railroad Depot to answer questions concerning the RI/FS for the Aberdeen Pesticide Dumps Site and the upcoming removal action at the Fairway Six Site. Fact sheets were available to the public at both meetings.

Section 113(k)(1) of CERCLA, as amended by SARA, requires EPA to establish administrative records containing documents used to select response actions under CERCLA. On May 12, 1989, EPA established an Administrative Record for the emergency response actions and the remedial action at the Fairway Six Disposal Site. The Administrative Record is available to the public at the repository located at the Aberdeen Town Hall in Aberdeen, North Carolina. On May 16, 1989, the Draft Feasibility Study on the Fairway Six Disposal Site was submitted to the repository in Aberdeen.

A public meeting was held at the Aberdeen Middle School in Aberdeen, North Carolina on May 16, 1989. The purpose of the meeting was to present to the public the findings of the Feasibility Study on the Operable Unit Two stockpile and to present EPA's proposed plan to remediate contamination at the site. Prior to the May 16 meeting, public notices and a press release were issued. Proposed plan fact sheets were available at the public meeting. Following this meeting, a public comment period was opened for 21 days, ending on June 6, 1989.

A responsiveness summary has been prepared and is attached to summarize community concerns and to provide a response to those documents received. A transcript of the May 16, 1989 public meeting is available for review in the Administrative Record.

4.0 Scope and Role of Operable Unit Within Site Strategy

This Record of Decision addresses the first remedial action activity at the site and will complete a response action initiated by the EPA Region IV Emergency Response Section. This Operable Unit (Operable Unit Two) was created to decrease and eliminate the release or threat of release, and pathway of exposure of the pesticide contaminated soil and debris at the site. The contaminated soil and debris have been excavated and stockpiled onsite. Operable Unit Two addresses the stockpile at the site.

A remedial investigation/feasibility study for Operable Unit One, the Aberdeen Pesticide Dumps Site, is currently ongoing. The Aberdeen Pesticide Dumps Site consist of at least five sites: Fairway Six, Farm Chemicals, McIver, Route 211 and Twin Sites. The Fairway Six Disposal Site (Operable Unit Two) was created as a discrete response action to address pesticide contaminated soil and debris removed and stockpiled onsite. The area of the excavated trenches on the sixth fairway are currently being investigated through the RI/FS process for Operable Unit One. A final remedy cannot be selected for Operable Unit One until after completion of the RI and FS.

Operable Unit Two will permanently eliminate any threat associated with stockpiled materials at the Fairway Six Disposal Site while complete site characterization information is being gathered and analyzed. This remedial action will use thermal treatment to detoxify contaminated soil and debris currently stored onsite, analyze and confirm that the residual ash is non-hazardous and dispose of the residual ash onsite. Exact location of the onsite disposal area will be addressed in the remedial design phase. Implementation of this phased approach will minimize the risk of human or environmental exposure through use of proven technologies in a manner consistent with a permanent remedy.

5.0 Summary of Site Characteristics and Risks

5.1 Site Characteristics

The pesticide contaminated soil and debris removed from Trenches 3 through 6 is currently stockpiled onsite in chemically affixed top and bottom 30-mil PVC liners. Prior to excavation and storage, the currently stockpiled materials represented the source of contamination that will be addressed by this Operable Unit. The pile measures 215' long x 110' wide x 28' high and contains approximately 22,000 cubic yards (55 million pounds) of material. The stockpile is enclosed by a 6 foot high chain-link fence.

The EPA Emergency Response action identified chlorinated organo-pesticides as the predominant contaminants of concern at the site. Table 1 illustrates concentrations of contaminants from samples collected and analyzed by an onsite mobile laboratory prior to and during the August 1988 removal action. Three selected areas (A3-0, G1-0, and G3-2) of highest concentrations among all "hot spots" are noted in Table 1. Analytical results of these areas are representative of the chemical nature of the stockpile. Materials from these areas were transported and incorporated into the stockpile at the Fairway Six Disposal Site. In addition Table 2 represents samples collected in June 1989 from the stockpile to better characterize the waste materials in the pile. Listed in Table 2(A) are the highest concentrations of pesticides detected in the stockpile. Listed in Table 2(B) are results of pesticides identified in the soil extract using the EP (extraction procedure) toxicity test methods. The waste materials in the stockpile are contaminated with alpha-, beta-, gamma-, and delta-BHC, heptachlor, DDE, DDT, toxaphene, aldrin, dieldrin, endosulfan, DDD and alpha-chlordane.

Analysis of the excavated trenches identified methylene chloride, acetone, and toluene at maximum concentrations of 480, 1,400, and 72 ug/kg, respectively. These were the only volatile organic compounds (VOCs) detected above the laboratory detection limits. These compounds are commonly found as laboratory analysis artifacts; and were therefore, not considered in the Feasibility Study. Semi-volatile organic compounds (SVOCs) were detected in some samples, but at generally low levels. Cyanide and PCB's were below detection limits in all samples.

The stockpile is the source of contamination of concern for Operable Unit Two. The various non-contiguous sites (Operable Unit One), including the Fairway Six area, are being addressed by the on-going RI/FS.

Table 3 from the baseline risk assessment presents properties, environmental mobility and fate of site contaminants. Pesticides are relatively immobile in the environment. Among the pesticides detected, gamma-BHC or lindane is the most mobile species. Mobile pesticides will usually penetrate into groundwater or surface water. Less mobile pesticide species tend to be bound to soil particles, and become mobile only in association with soil particles via erosion and re-deposition.

Numerous potential pathways of the pesticide contaminants from the stockpile were identified. However, if the encapsulating liner of the Operable Unit becomes damaged, the major contaminant transport paths potentially impacting human and environmental receptors are:

1

TABLE 1

MAJOR LABORATORY RESULTS FOR 1988 EMERGENCY RESPONSE ACTION

Sample Station	Sampling Date	Concentration (mg/kg)														
		Alpha-BHC		Beta-BHC		Gamma-BHC (Lindane)		Heptachlor		DDE		DDT		Toxaphene		Total** of High's
		Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	
A3-0		--	2,457	ND	500	--	737	ND	509	--	299	--	4,492	--	ND	8,994
G1-0		--	ND	--	ND	--	ND	--	ND	--	ND	--	47	36,050	36,350	36,397
G3-2		--	1,288	--	269	--	179	--	ND	--	ND	--	142	--	ND	1,873
SA-1	8/15/88	--	148	--	40	19	50	--	10	--	24	--	194	--	ND	466
SA-2	--	ND	59	--	ND	ND	11	--	ND	ND	61	ND	211	--	ND	342
SA-3	8/17/88	--	54	--	15	--	8	--	31	--	61	--	197	--	ND	366
SA-4	8/17/88	--	214	--	912	--	55	--	57	--	256	--	872	--	ND	2,366
SA-5	8/17/88	--	ND	--	135	--	61	--	56	--	162	--	196	--	ND	610
SA-6	8/19/88	--	73	ND	50	ND	50	ND	50	ND	50	--	168	--	ND	441
SA-7	8/19/88	--	98	ND	50	ND	50	ND	50	ND	50	--	184	--	ND	482
SA-9	8/20/88	306	314	104	345	54	200	50	200	123	200	279	876	--	ND	2,135
SA-10	8/22/88	--	140	48	480 *	52	520 *	84	840 *	--	110	--	432	--	ND*	2,522
SA-11	8/22/88	--	260	ND	100	--	57	ND	100	--	135	--	884	--	ND	1,536
SA-12	8/23/88	--	187	ND	50	--	57	ND	50	--	109	--	372	--	ND	825
SA-13	8/23/88	--	176	--	76	--	4.5	--	2.5	--	116.2	--	534	--	ND	909
SA-14	8/24/88	--	197	--	72	--	39	--	62	--	140	--	411	--	ND	921
SA-15	8/24/88	--	157	--	49	--	34	--	21	--	108	--	340	--	ND	709
SA-16	8/25/88	--	136	--	41	--	27	--	27	--	140	--	428	--	ND	799
SA-17	8/25/88	--	371	--	109	--	64	ND	24	--	80	--	251	--	ND	899
SA-18	8/26/88	--	139	--	49	--	34	--	ND	--	115	--	391	--	ND	728
SA-19	8/26/88	--	119	ND	50	ND	29	ND	29	--	115	--	347	--	ND	689
SA-20	--	ND	107	--	ND	ND	20	ND	15	ND	50	ND	233	--	ND	425
Maximum	--	306	2,457	104	912	54	737	84	840 *	123	299	279	4,492	36,050	36,350	36,397

*Not sure (conflicting data between data reports).

**It was confirmed that high's always associated to each other for a given sample; therefore, high's are logically additive.

ND: Not detected.

--: Analysis not requested.

TABLE 2
MAJOR LABORATORY RESULTS FROM JUNE 1989 SAMPLING OF THE FAIRWAY SIX STOCKPILE

Sample No.	Alpha-BHC	Gamma-BHC	4-4'-DDD	4,4'-DDT	Heptachlor	Toxaphene
(A) (mg/kg)						
Composite "9" (1)	BQL (4)	BQL	BQL	560	BQL	BQL
F6EE (2)	230	43	220	BQL	BQL	BQL
F6T3 (3)	BQL	BQL	BQL	BQL	26	BQL
(B) (mg/l) EP Toxicity Results						
Composite "9"		.39				BQL
F6EE		.88				BQL

(1) Composite soil sample of a total on fine samples collected from the Fairway Six stockpile.

(2) Fairway Six soil sample collected from the east end of the stockpile.

(3) Fairway Six soil sample collected from the top of the stockpile at a vertical depth of 3 feet.

(4) BQL - Below Quantitation Limit

Note: A total pesticide/PCB scan was analyzed for in 9 soil samples collected from the Fariway Six stockpile and one composite of those nine samples. Highest concentrations of pesticides detected are reported.

TABLE 3
PROPERTIES AND ENVIRONMENTAL MOBILITY/FATE OF SITE CONTAMINANTS

COMPOUND	VAPOR PRESSURE (mm Hg) (1),(2),(3)	MOLECULAR WEIGHT (gm/mole) (1),(2),(3)	SPECIFIC GRAVITY (1),(2),(3)	WATER SOLUBILITY (mg/l) (1),(2),(3)	HENRY'S CONSTANT, H (dimension-less) (1)	Half-Life (hrs) * (4)	Half-Life (hrs) * (5)	SOIL ADSORPTION COEFFICIENT Koc (dimension-less) (1)	RELATIVE MOBILITY (6)	OCTANOL-WATER PARTITION COEFFICIENT Log (P or Kow) (dimension-less) (1),(2)	BIOCONCEN-TRATION FACTOR (7)	SCORE (7)	BIOACCUMULATION POTENTIAL	PERSISTENCE
BHC-Alpha (HCCH)	2.50E-05	291	NA	1.63E+00	5.57E-06	1.03E-03	5.39E-02	3.80E+03	Immobile	3.90	130	-1	Suspected low	Suspected low
BHC Beta	2.80E-07	291	NA	2.40E-01	4.47E-07	1.35E-04	5.23E-03	3.80E+03	Immobile	3.90	130	-1	Suspected low	Suspected low
BHC Delta	1.70E-05	291	NA	3.14E+01	2.07E-07	2.92E-04	1.11E-04	6.60E+03	Immobile	4.10	130	-1	Suspected low	Suspected low
BHC Gamma (Lindane)	1.60E-04	291	NA	7.80E+00	7.35E-06	7.70E-02	4.41E-02	1.08E+03	Moderately mobile	3.90	130	-1	Suspected low	Suspected low
DDD	1.89E-06	320	NA	1.00E-01	7.96E-06	7.96E-02	3.38E-02	7.70E+05	Immobile	6.20	NA	NA	NA	NA
DDT	6.50E-06	318	NA	4.00E-02	6.30E-05	9.34E-01	4.42E-01	4.40E+06	Immobile	7.00	51,000	-3	Suspected high	Suspected high
DDE	5.50E-06	355	NA	5.00E-03	5.13E-04	1.36E-01	1.47E-01	2.43E+05	Immobile	6.19	54,000	-3	Suspected high	Suspected high
Aldrin	6.30E-06	365	NA	1.80E-01	1.60E-05	4.23E-02	1.59E-02	9.60E+04	Immobile	5.30	28	0	Negligible	Up to 1 week
Endosulfan	NA	407	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	1.78E-07	381	NA	1.75E-01	4.58E-07	1.51E-04	5.38E-03	1.70E+03	Moderately mobile	3.50	4,760	-2	Suspected high	Suspected high
Toxaphene	4.00E-01	414	1.54	5.30E-01	4.36E-01	7.10E-01	1.26E-01	9.64E+02	Immobile	3.30	13,100	-3	Suspected high	Suspected high
Heptachlor	3.00E-04	374	NA	1.80E-01	8.19E-04	9.01E+00	1.33E-01	1.20E+04	Immobile	4.40	15,700	-3	Suspected high	Suspected high
Endrin	2.70E-07	381	1.65	2.50E-04	NA	NA	NA	NA	NA	5.60	NA	NA	NA	NA
Chlordane	1.00E-05	410	1.59	5.60E-01	9.63E-06	7.45E-02	2.90E-02	1.40E+05	Immobile	3.32	14,000	-3	Suspected high	Suspected high

NOTES:
* Calculated
NA = Not applicable or not available

SOURCES:
(1) USEPA, 1986. Super Fund Public Health Evaluation Manual, Exhibit A-1, EPA/540/1-86/060
(2) Clement Associates, Inc. Sept. 27, 1985. Chemical, Physical, and Biological Properties of Compounds Present at Hazardous Waste Site
(3) Sax, 1979. Dangerous Properties of Industrial Materials, Fifth Edition, Van Nostrand Reinhold Co. [illegible], NY
(4) Dilling, 1977. Interphase Transfer Processes. II. Evaporation Rates of Chloro Methanes.
(5) Mackay & Leinonen, 1975. Rate of Evaporation of Low-Solubility Contaminants from Water Bodies to Atmosphere. Environmental Science & Technology 9(13): 1178-1180
(6) Kenaga and Goring, 1980. Relationship between Water Solubility, Soil Sorption, Octanol/Water Partitioning, and Concentration of Chemicals in Biota. In: Eaton, J.C., P.R. Parrish, and A.C. Hendricks, eds., American Society for Testing and Materials. ASTM STP 707 pp 78-115
(7) Neely, Branson, and Blau, 1974. Partition Coefficients to Measure Bioconcentration Potential of Organic Chemicals. Environmental Science & Technology 8(13):1113-1115

- wind-action causing resuspension of pesticide contaminated particles;
- leaching of contaminants into groundwater/surface water;
- erosion of waste and contaminated soils into surface waters; and
- uptake of surface water and/or sediment contaminants by organic species, which could potentially lead to secondary human ingestion.

Contaminants may be transported via these pathways to the nearby Golf Course, to Aberdeen Creek, and to Pages Lake. The encapsulating PVC liner is currently intact; therefore, the above contaminant migration mechanisms are not occurring, but they potentially could occur if the liner becomes damaged.

Based on the assumption that the PVC liner will eventually fail, the potential adverse impacts of the stockpile on human and environmental receptors are:

(1) Users of groundwater and surface water for drinking, showering/bathing, food preparation, clothes washing, and lawn or garden watering purposes.

(2) Recreational users of surface waters for swimming (dermal exposure) and boating (accidental dermal exposure).

(3) Human consumption of vegetation, small animals, and fish potentially contaminated by uptake or ingestion of bioaccumulative contaminants.

(4) Third-party intruders who may come into direct dermal contact with contaminants on site.

(5) Aquatic biota and terrestrial fauna and flora that may be stressed or injured.

5.2 Site Risks

The contaminants of critical concern for the stockpile Operable Unit Two are:

- Aldrin
- Alpha-, Beta-, Delta-, and Gamma-BHC
- Chlordane
- DDE, DDD, and DDT
- Dieldrin
- Endosulfan
- Endrin
- Heptachlor
- Toxaphene

Table 4 is a comparative table which lists environmental exposure criteria for these critical contaminants. The exposure assessment identified four modes of exposure to the organo-chlorine pesticides in the waste pile as (1) direct contact on the site, (2) air releases from the waste pile, (3) surface water contamination from erosion of the pile materials, and (4) groundwater contamination. Exposure to the organo-chlorine pesticides are dependent on the condition of the PVC liner encapsulating the waste material. Potential for direct contact on site is unlikely since the waste material is currently encapsulated and enclosed within a 6 foot high chain-link fence. Air releases and skin contact could occur as a result of fugitive dust emissions caused by wind erosion of the wastes and contaminated soils in the stockpile. The most significant routes of exposure from the site are through surface water and ground water contamination if the PVC liner is damaged. The topography slopes downward to the north to an unnamed creek. The creek discharges via a water impoundment about 2,000 feet northeast of the site. The groundwater at the Fairway Six Disposal Site is hydrogeogically connected to the Sandhills Aquifer, which is used for agricultural, residential, and public water supplies in the study region. Approximately 5,000 local residents use the Aberdeen Municipal Water System which is supplied by twelve municipal wells within the Sandhills Aquifer. Well No. 1 has been out of service since 1986 as a result of lindane contamination exceeding the MCL of 4 ppb. An unknown number of rural residents also obtain their drinking water from wells drilled into this aquifer. Groundwater contamination with lindane has been documented in both municipal and residential wells within the Aberdeen area. The contaminants detected at the Fairway Six Disposal Site are predominantly organo-chlorine pesticides. These compounds can interfere with axonic transmission of nerve impulses. The disruption of nervous system function, especially that of the brain, results in behavioral changes, sensory and equilibrium disturbances, involuntary muscle activity, and depression of vital centers, particularly respiratory centers. When organo-chlorine pesticides are ingested, nausea and vomiting commonly occur. When dermally absorbed, apprehension, confusion, twitching, tremors, and convulsions may be the first symptoms. Respiratory depression is caused by these pesticides and by the solvents in which they are usually dissolved. Select organo-chlorine pesticides also cause myocardial irritability. Although convulsive activity in organo-chlorine pesticide poisoning may be severe, there is a good likelihood of complete recovery if convulsions are controlled and vital functions sustained.

The acute toxicity of the organo-chlorine pesticides (OCPs) found in the stockpile range from highly toxic for endrin to moderately toxic for most of the other pesticides found.

TABLE 4
ENVIRONMENTAL EXPOSURE CRITERIA

CRITICAL CONTAMINANT	MAX. SOIL CONCENTRATION (mg/kg)	NPDWR (ug/l) (B)		RfD ACCEPTABLE INTAKE (B) & (C)				EPA DRINKING WATER HEALTH ADVISORIES (ug/l) (B)		AMBIENT WATER QUALITY CRITERIA (ug/l)						CAG UNIT RISK 1 (mg/kg/day) (B) & (C)		NATIONAL INTERIM DRINKING WATER STANDARDS (ug/l) (A)	NIOSH RECOMMENDED STANDARDS AIR (ug/cu.m.) (A)	OSHA STANDARDS AIR (ug/cu.m.) (A)	ACGIH TLV AIR (ug/cu.m.) (A)
				ORAL ROUTE (mg/kg/day)		INHALATION ROUTE (mg/kg/day)				AQUATIC LIFE (A)				HUMAN HEALTH (A) & (B)							
										FRESH WATER		SALT WATER									
		MCL	MCLG	SUB-CHRONIC	CHRONIC	SUB-CHRONIC	CHRONIC	CHILD (10 Kg)	ADULT (70 Kg)	ACUTE	CHRONIC	ACUTE	CHRONIC	AQUATIC ORGANISMS & DRINKING WATER	Maximum Contaminant Level	ORAL	INHALATION				
Alpha-BHC (HCCH) CAS No. 319-84-6	2,457	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.0092	NA	11	NA	NA	NA	NA	NA
Beta-BHC CAS No. 319-85-7	912	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	.016	NA	18	NA	NA	NA	NA	NA
Gamma-BHC(Lindane) CAS No. 58-89-9	737	4	0.2*	3E-03	3E-04	ND	ND	33	120	2.0	0.08	0.16	NA	.0186	4	1.3	ND	4	NA	500 TWA	NA
DDD CAS No. 72-54-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.6	NA	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
DDT CAS No. 50-29-3	4,492	NA	NA	5E-04	5E-04	ND	ND	NA	NA	1.1	0.001	0.13	0.001	.000024	NA	0.34	0.34	NA	NA	1000 TWA	1000 TWA
DDE CAS No. 72-55-9	299	NA	NA	NA	NA	NA	NA	NA	NA	1050	NA	14	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin CAS No. 309-00-2	NA	NA	NA	3E-05	3E-05	ND	ND	NA	NA	3.0	NA	1.3	NA	.000074	NA	17	17	NA	NA	250 TWA	250 TWA 50 STEL
Endosulfan CAS No. 115-29-7	NA	NA	NA	2E-04	5E-05	ND	ND	NA	NA	.22	.056	.034	.0087	74	NA	NA	NA	NA	NA	NA	NA
Dieldrin CAS No. 60-57-1	NA	NA	NA	5E-5	5E-5	ND	ND	NA	NA	2.5	.0019	.71	.0019	.000071	.000076	1.6	1.6	NA	NA	NA	NA
Toxaphene CAS No. 8001-35-2	36,350	5	0*	NA	NA	NA	NA	NA	NA	.73	.0002	.21	.0002	.00071	5	1.1	1.1	NA	NA	500 TWA	500 TWA 1000 STEL
Heptachlor CAS No. 76-44-8	840	NA	0*	5E-04	5E-04	ND	ND	NA	NA	0.52	0.0038	0.053	0.0036	.00028	NA	4.5	4.5	NA	NA	500 TWA	500 TWA 2000 STEL
Endrin CAS No. 72-20-8	NA	0.2	NA	5E-04	3E-04	ND	ND	4.5	16	0.18	0.0023	0.037	0.0023	1	.2	NA	NA	1.0 (PDWS)	NA	100 TWA	NA
Chlordane CAS No. 57-74-9	NA	NA	0*	5E-05	5E-05	ND	ND	NA	NA	2.4	0.0043	0.09	0.0040	.0046	NA	1.3	1.3	NA	NA	500 TWA	500 TWA 2000 STEL

I. CATEGORY EXPLANATION

NPDWR - National Primary Drinking Water Regulations
MCL - Maximum Contaminant Level
MCLG - Maximum Contaminant Level Goals, or, Recommended MCL
RfD - Reference Dose
Health Advisories - EPA Health Advisory:
Suggested No Adverse Response Levels (SNARLs) based on 10 kg child who consumes 1 liter of water per day and 70 kg adult who consumes 2 liter of water per day ranging from several months to several years.

Ambient Water Quality Criteria - based on a 70 kg adult who ingests 2 liters of water and 6.5 g of aquatic organisms per day.
CAG - Carcinogenesis Assessment Group
NIOSH - National Institute for Occupational Safety and Health
OSHA - Occupational Safety and Health Administration
ACGIH - American Conference of Governmental Industrial Hygienists

II. DATA EXPLANATION

ND - Not Determined
NA - Not available or not applicable
* - Proposed MCLG, or, Proposed Recommended MCL
PDWS - PRIMARY DRINKING WATER STANDARDS
TWA - Time Weight Average
STEL - Short Term Exposure Limit

III. REFERNECE

(A) "Chemical, Physical, and Biological Properties of Compounds Present at Hazardous Waste Sites" prepared for the USEPA by Clement Associates, Inc., September 27, 1985, the 1981-82 Edition.
(B) "Superfund Public Health Evaluation Manual," EPA/540/1-86/060, October 1986
(C) "Health Effects Assessment Summary Tables First Quarter FY89", USEPA, Jan. 30, 1989

In addition to the acute toxic effects of the OCPs, numerous affects resulting from chronic exposure have been documented. DDT, chlordane, heptachlor, and toxaphene have been shown to increase the incidence of liver tumors in laboratory animals. Impairment of reproductive function in laboratory animals by OCPs has also been frequently reported. In a few cases, chlordane has apparently induced megaloblastic anemia after protracted low-level exposures, which resolved following termination of the exposure. Lindane is a suspected hepatotoxic agent in predisposed individuals. As chlorinated hydrocarbons, the OCPs stimulate the production of drug-metabolizing enzymes in the liver. Induction of these enzymes is associated with increased liver weight and changes in liver cells.

Organochloride pesticides are highly bioaccumulative in fish and are among the most toxic of pesticides to aquatic life. OCPs accumulate in fish tissue. Many OCPs, including those listed on Table 4, pose chronic toxicity to aquatic animals at ambient water concentrations below 1 ug/L. OCPs bioconcentrated in aquatic life may produce adverse effects in the wildlife consuming them as well.

Several of the pesticides identified to be present in the stockpile are carcinogenic in animals and some of these are potentially carcinogenic in man:

- o BHCs (positive carcinogen in animals, suspected in man);
- o DDE (positive carcinogen in animals, potential in man);
- o DDT (positive carcinogen in animals, potential in man);
- o Heptachlor (positive carcinogen in animals, suspected in man); and
- o Lindane (positive carcinogen in animals, suspected in man).

There is potential for cancer risks posed by the OCP's found in the stockpile (if the stockpile remains on site). The risks are potentially increased because of the synergistic effect of combined pesticides and the high concentrations observed in the wastes and contaminated soils. In addition to being toxic and carcinogenic, some of the pesticides contained in the stockpile are also extremely persistent in the environment.

6.0 Alternatives Evaluation

The purpose of remedial action at the Fairway Six Disposal Site Operable Unit Two is to mitigate and minimize potential risks to public health, welfare, and the environment posed by contaminated site soils. The risks have been temporarily controlled by removing the contaminated soil from the subsurface and encapsulating it on site in a top and bottom liner and restricting site access by enclosing the stockpile within a 6 foot high chain-link fence.

An initial screening of applicable technologies was performed to identify those which best meet the criteria of Section 300.68 of the National Contingency Plan (NCP). At the initial stage of the FS, alternatives were screened based on site-specific problems, associated remedial costs, and acceptable engineering practices. The technology alternative development and screening process is generally performed on an informal basis, usually described as "best engineering judgement." Following the initial screening of technologies, potential remedial action alternatives were identified and analyzed. Table 5 identifies technology alternatives which were evaluated for application to the stockpile at the site. Upon completion of this evaluation, the technology alternatives that were determined to be the most feasible were used to develop various remedial action alternatives. A detailed development and evaluation of the remaining alternatives was based on cost-effectiveness, long-term effectiveness and permanent remedy, reduction of volume, toxicity and mobility of hazardous contaminants of concern, implementability, state acceptance, responsiveness to community concerns, compliance with ARAR's to the extent feasible and effectiveness over the short-term as well as the long-term.

The materials in the stockpile onsite are contaminated soil and debris. They are subject to the Land Disposal Restrictions regulations because:

(1) placement has occurred; and

(2) they have been shown to exhibit RCRA characteristics of a hazardous waste under 40 CFR, Subpart C, specifically the EP toxicity characteristic [Table 2(b)], found in § 261.24 (b).

Although the materials in the stockpile are RCRA waste by characteristic, the source of the materials is uncertain and cannot be classified as a discarded commercial chemical and is therefore not a RCRA listed "P" or "U" waste under 40 CFR § 261.33.

Analysis of samples from the excavated trench material identified total concentrations of Halogenated Organic Compounds (HOCs) in excess of 1000 mg/kg. Thus, since this material has exhibited the EP toxicity characteristic, is a California list waste. The treatment standard identified in 40 CFR § 268.42 (a)(2) for a California list HOC waste in total concentrations greater than 1000 mg/kg is thermal treatment.

The alternatives can be grouped into two basic categories: land disposal without treatment and land disposal with prior thermal treatment. The latter would involve thermal treatment of 22,000 cubic yards of contaminated soil and debris. The following eight remedial action alternatives were considered:

TABLE 5
REMEDIAL TECHNOLOGY ALTERNATIVES THAT PASSED INITIAL SCREENING

1. No Action
    - Without Periodic Environmental Monitoring
    - With Periodic Environmental Monitoring
2. Containment
3. Removal
4. On-Site Treatment
    - Incineration
    - Stabilization/solidification (physical/chemical treatment)
    - Biological treatment
5. Off-Site Treatment
    - Incineration
    - Stabilization/solidification (physical/chemical treatment)
    - Biological treatment
6. *In Situ* Treatment
    - Bioreclamation
    - Soil washing/flushing
    - Vitrification
    - Stabilization/solidification
7. On-Site Land Disposal
8. Off-Site Land Disposal

1 No Action

2 No Action With Periodic Environmental Monitoring.
  - inspect the PVC liner system for damage
  - repair damage if necessary

3 Onsite RCRA Land Disposal
  - construct and operate an onsite landfill in compliance with RCRA requirements and standards
  - utilize front-end loaders to transport waste to landfill
  - monitoring and system repair once every five years for 30 years

4 Offsite RCRA Land Disposal
  - load contaminated soil and debris into dump trunks using front-end loaders
  - cover waste with tarps to prevent spillage and to minimize entrainment
  - manifest and haul to an offsite landfill meeting RCRA requirements

5 Onsite Thermal Treatment of Wastes and Offsite RCRA Land Disposal of Residual Ash
  - transfer waste materials from stockpile to temporary waste feed homogenizing area and homogenize them
  - thermal treatment of homogenized wastes in an onsite mobile thermal treatment facility in compliance with RCRA standards
  - onsite treatment of process wastewater or scrubber blowdown sludge by reinjection into the thermal treatment facility
  - offsite disposal of residual ash
  - air monitoring of emissions

6 Onsite Thermal Treatment of Waste and Onsite RCRA Land Disposal of Residual Ash
  - transfer waste materials from stockpile to temporary waste feed homogenizing area and homogenize them
  - thermal treatment of homogenized wastes in an onsite mobile thermal treatment facility in compliance with RCRA standards
  - onsite treatment of process wastewater or scrubber blowdown sludge by reinjection into the thermal treatment facility
  - construct and operate an onsite landfill in compliance with RCRA requirements and standards
  - dispose residual ash in the onsite RCRA landfill
  - air monitoring of emissions

7 Offsite Thermal Treatment of Waste and Offsite RCRA Land Disposal of Residual Ash
  - load waste materials into dump trucks using front end loaders
  - cover waste with tarps to prevent spillage and to minimize air entrainment
  - manifest and haul to an offsite RCRA-approved thermal treatment facility

8 Onsite Thermal Treatment of Waste and Onsite Land Disposal of Residual Ash
- transfer waste materials from stockpile to temporary waste feed homogenizing area and homogenize them
- thermal treatment of homogenized wastes in an onsite mobile thermal treatment facility in compliance with RCRA standards
- onsite treatment of process wastewater or scrubber blowdown by reinjection into the thermal treatment facility
- confirmatory analysis of the residual ash to demonstrate the ash is non-hazardous per RCRA
- air monitor emissions
- dispose residual ash onsite

6.1 Description of Alternatives

Alternative 1

The Superfund Program requires that the "no-action" alternative be considered at every site. Under the "no-action" alternative, EPA would take no further action at the site to control the source of contamination. This alternative serves as a baseline to which other alternatives can be compared. The contaminated waste would remain encapsulated in the 30-mil PVC liner system. The manufacturer's guarantee on this liner is approximately one year. The physical integrity of the liner will be challenged and it will, undoubtedly, eventually deteriorate and fail. Damage to the liner would result in uncontrolled releases of pesticide containing waste materials from the stockpile to the multi-media environment at the site. Area surficial soils, sediments, surface water, groundwater, and biota could be contaminated or damaged.

This alternative does not attain ARARs. Also, this alternative inadequately complies with the CERCLA/SARA and NCP objectives of reducing waste volume, toxicity, and mobility. Potential long-term threat to public health is not addressed under this alternative. Institutional control of land use would be required indefinitely. There are no costs associated with this No Action alternative.

Alternative 2

Under the alternative of no action with periodic environmental monitoring, no additional remedial activities would be performed. The PVC liner system would be periodically inspected for damage to the top liner which would be repaired as it is discovered. No other environmental monitoring would be performed.

Although this alternative meets CERCLA/SARA goals of preventing or minimizing migration of hazardous substances on a short-term basis, the potential long-term threat to the environment or public health following irreparble deterioration of the bottom encapsulating liner is not addressed. Similar to Alternative 1, if liner failure occurs, uncontrolled releases of pesticide containing waste materials from the stockpile to the environment at the site would not be prevented.

Except as a baseline case, this No Action with Periodic Monitoring alternative is institutionally unacceptable. Present base worth cost of this alternative would be $386,000. Institutional control of land use would be required indefinitely.

Alternative 3

Under Alternative 3, an onsite landfill would be constructed in full compliance with RCRA requirements. The wastes in the stockpile would be removed and hauled to the new landfill. During removal of the stockpile, contaminants may be released from the disturbed areas; however, past experience with excavation of the material on site indicates that the risk of air pollution during the removal of the stockpiled material is minimal. Special construction techniques, if necessary, could be implemented to minimize the emissions.

The landfill design would conform with RCRA and other environmental regulatory requirements. The landfill would have two liners for leachate collection and leak detection zones. For purposes of this evaluation, a new landfill location was preliminarily selected based on accessibility, buffer distance from the golf course, avoidance of all known and potential waste sources and residual contamination areas at the site, and the ease of post-closure maintenance and monitoring. The landfill would be capped with a double-layer PVC liner. Additional soil with a vegetative cover would be placed on top of the finished landfill.

Average thickness of the landfill would be 17 feet. The landfill bottom would be below grade but above the groundwater table. Leachate generated would be collected and treated by an onsite activated carbon treatment system. After treatment, the water would be discharged into the local drainage ditch away from the landfill. The system will comply with ARARS governing surface water discharge permits. Sludge would be collected and disposed in an offsite RCRA-approved landfill.

This alternative would require approximately 12 months for system planning/design to meet ARARS and an additional 5-6 months for construction. Short-term risk to users of the golf course, residents in the immediate area of the facility, and remediation workers would exist during construction of the landfill. Although source control by containment of the waste substantially reduces the chronic and acute health risks to area residents, this alternative does not reduce the volume or toxicity of the wastes. This alternative requires significant institutional control to ensure that the facility is not disrupted by development planned in conjunction with the rest of the Golf Course.

Environmental effects during the construction phase include:

- use of heavy earth moving equipment will generate fugitive dusts, thus increasing the potential for spreading pesticide dusts into the environment; and
- uncontrolled releases of exposed pesticide wastes via the surface water route during precipitation.

Since hazardous substances would remain on site, a review of the site would take place once every five years. Base present worth cost for this alternative is estimated to be $11,498,000.

Alternative 4

Under this alternative, the waste pile would be excavated using front-end loaders, dumped into trucks, manifested and hauled for final disposal at an offsite landfill, meeting RCRA requirements. The 20-cubic yard capacity trucks used would be equipped with tarps to prevent spillage and to minimize air entrainment of the contaminants.

The responsibility for complete regulatory/environmental compliance at the selected landfill would rest with its owner/operator.

This alternative will reduce or eliminate future contamination by removing the source. The total volume of materials and wastes to be disposed offsite is estimated to be about 22,000 cubic yards. It is estimated that this alternative would take about 6 months for procuring offsite disposal services and an additional 3-4 months for full implementation.

Short-term risk is associated with the onsite removal and transportation of waste materials from the stockpile to the offsite landfill. The types and degree of risk during implementation under this alternative will be similar but of shorter duration than those under Alternative 3, because the implementation period for onsite remedial activities for this alternative will be shorter than that for Alternative 3. Since the waste material would be removed from the site under this alternative, the chronic and acute health risks to the nearby residents would be substantially reduced. Although, the RCRA-permitted landfill does contain the waste materials and confirms their long-term confinement by monitoring, it does not reduce the toxicity or volume of the wastes.

Environmental risks associated with this alternative are the same as those for Alternative 3 during the excavation of the stockpile. An additional risk of environmental exposure is associated with possible fugitive emissions and spills from vehicles in transit to the disposal facility.

Of major importance in determining the cost of the offsite landfill alternative is the distance to the selected RCRA-approved landfill. For cost estimating purposes, it is assumed that the one-way truck mileage would be on the average of 400 miles. The base present worth cost is estimated to be $10,043,000.

Alternative 5

This alternative considered onsite thermal treatment of the waste materials in the stockpile and offsite RCRA land disposal of residual ash. The stockpile would be transferred to a waste homogenizing area where they will be further mixed and homogenized by use of power-screens. The excavated waste materials will be thermally treated in an onsite mobile thermal treatment facility. Operation of the thermal treatment facility will be in compliance with RCRA regulations (particularly, Subpart O, 40 CFR 264) and will comply with all required RCRA performance standards.

Excess quenching water and scrubber water, if any, will be reinjected into the facility for treatment. Air pollution control wastes or sludges will be reinjected into the thermal treatment facility for further treatment. Residual ashes will be collected and transported to an offsite RCRA-approved landfill for final disposal. Air pollution control systems will be utilized to remove by-products and non-combustible materials from the gas stream.

EPA's Emergency Response Section performed an onsite test burn utilizing a mobile rotary kiln incinerator in December 1986 at the site. Pesticides in the soil fed to the incinerator were effectively removed as evidenced by disappearance of the POHCs, alpha-BHC and DDT. A properly designed and operated incinerator with an air pollution control system and ash management system will meet action-Specific ARARs. The evaluation of the offsite landfilling of residual ash is relatively the same as that presented in Alternative 4, except that the volume of ash needing to be disposed under Alternative 5 will be slightly less than that for Alternative 4.

Nearly complete destruction of chlorinated organo-pesticides with high destruction and removal efficiency (DRE) can be achieved by using the thermal treatment technology. For the subject stockpile, because of the high soil content of the wastes, the reduction in physical volume is not expected to be high. However, nearly total destruction of hazardous constituents can be readily translated into chemical-specific volume reduction. Thus, the wastes containing organic pesticides would be destroyed.

The use of mobile thermal treatment facilities for the destruction of pesticide contaminants in solid or semi-solid wastes similar to those in the stockpile has been well demonstrated to be an effective and reliable process. The 1986 test burn results indicated that applicable performance standards were and can be met with the use of a mobile thermal treatment facility. Although the FS identified the rotary kiln as the most appropriate incinerator for processing the waste in the stockpile, all types of incinerators will be considered during the remedial action contract bidding and selection process to ensure selection of the most effective incinerator technology available.

Short-term health risks associated with excavating the stockpile would be the same as those described for Alternative 3. Because of the onsite thermal treatment of the wastes in the stockpile, the duration of exposure to the wastes would be considerably lengthened for this alternative compared with on- or offsite landfilling operations under Alternatives 3 and 4. Residual risk to the general public would be significantly reduced. The associated environmental impacts of this alterntive are considered to be minor.

It is estimated that this alternative will take about 6 months for procuring an on site mobile thermal treatment facility and an additional 13½ months for system start-up, testing, thermal treatment, and demobilization. Off site disposal would coincide with the thermal treatment operation. Institutional controls on land use would not be required. Present base worth cost is calculated to be $20,645,000.

Alternative 6

This alternative is the same as Alternative 5 with the exception that the thermal treatment ash would be disposed of in a permanent onsite RCRA-compliance landfill. The onsite thermal treatment would be the same as defined in Alternative 5. The onsite landfill design would conform with all RCRA requirements. Construction details are the same as those presented in Alternative 3.

Differences between this Alternative and Alternative 3 are:

o it involves the landfilling of residual ash, which is stabilized, relatively inert, non-hazardous, non-reactive, and possibly non-corrosive compared with untreated wastes to be land-disposed under Alternative 3; and

o the total volume of ash to be disposed under this alternative is slightly less than the volume of untreated wastes under Alternative 3.

The onsite thermal treatment facility would have the same level of performance and reliability as that mentioned in the discussion under Alternative 5.

Health risks associated with the excavation and onsite thermal treatment of the waste materials from the stockpile will be the same as those described for Alternative 5. Institutional control of land use would be required indefinitely.

It is estimated that this alternative will take about 6 months for procuring an onsite mobile thermal treatment system and 1.5 years to completely implement this alternative. The base present worth is $20,770,000.

Alternative 7

This alternative considers offsite thermal treatment of waste and offsite disposal of residual ash. The offsite thermal treatment facility would be required to have the same performance standards and design criteria considered under Alternative 5 for the onsite thermal treatment activities.

The thermal treatment and landfill technology for this alternative is engineeringly sound, assuming the offsite facility is properly designed, operated, and maintained during its operation and is properly closed at the end of its service life in accordance with RCRA regulations and other governing environmental laws and regulations. The thermal treatment facility would be responsible for disposal of residual ash in a RCRA-approved land disposal facility.

Performance of the offsite thermal treatment and selected offsite landfill alternative is anticipated to be essentially the same as the performance level discussed under Alternative 5.

Potential short- and long-term health effects or risks associated with this alternative would be essentially the same as for Alternative 4. However, the magnitude of risk associated with offsite landfilling under this alternative will be much less than that for Alternative 4, because the residual ash would be much less hazardous than the untreated waste to be handled under Alternative 4.

It is estimated that this alternative will take about 6 months for procuring offsite removal and thermal treatment services and an additional 6-8 months for complete implementation.

One of the most significant factors concerning the feasibility of offsite thermal treatment is the cost associated with the distance required to transport the waste materials to the designated treatment facility. Full enforcement of the Land Disposal Restrictions has led to a great surge in the demand for permitted commercial hazardous thermal treatment facilities.

The only potential candidate offsite thermal treatment facility identified is the Roland Facility in Texas at about 1,300 miles from the site. Base present worth cost is calculated to be $75,969,000.

Alternative 8

This alternative is the same as Alternative 6 with the exception that the residual ash will be disposed of in a permanent on-site non-RCRA landfill. The on-site thermal treatment portion of this alternative will be the same one as was defined in Alternative 5. The on-site landfill location would be determined in the remedial design phase.

Performance and reliability would be the same as that for Alternative 5 and would display a higher level of performance and reliability than Alternative 4, which deals with RCRA disposal of untreated wastes. This alternative would take about 6 months to procure an on-site mobile thermal treatment facility and an additional 13½ months to complete the remedial action.

The residual ash would be sampled and analyzed to verify the ash is non-hazardous, as determined by RCRA EP toxicity tests. The ash would also be sampled and analyzed for total metals to verify metal concentration in the ash is not occurring. The on-site land disposal of residual ash would occur concurrently with the thermal treatment operation.

Short-term health risks under this alternative would be associated with the excavation of the stockpile and onsite thermal treatment of the waste materials and would be the same as those described for Alternative 5. Residual or long-term health risks are minimal since the residual ash to be landfilled is non-hazardous.

Environmental impacts associated with excavation and thermal treatment will be the same as those described for Alternative 5. Effects associated with the on-site landfill would be similar to but much less than those described for Alternative 3. No long-term health effects will result from this alternative.

Base present worth cost for this alternative is estimated to be $14,533,000.

6.2 Summary of Comparative Analysis of Alternatives

Table 5 was developed for comparison of the various remedial action alternatives against the nine criteria: overall protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility and volume, short-term effectiveness, implementability, cost, and State and community acceptance.

TABLE 6
COMPARATIVE ANALYSIS OF ALTERNATIVES AGAINST THE NINE CRITERIA

Alternative	Overall Protection of Human Health & the Environment	Compliance with ARARs	Long-term Effectiveness & Permanence	Reduction of Toxicity Mobility & Volume	Short-term Effectiveness	Implementability	Cost (Base Present Worth)	State Acceptance	Community Acceptance
1. No Action	Poses long-term risks to golf course and nearby residents.	No Action	Does not provide long-term effectiveness and permanence.	Does not reduce toxicity or volume. Reduces mobility over short-term.	Contaminants are encapsulated and present little threat.	Has been implemented.	$ 0	No	One environmental group prefers no action until later date.
2. No Action with Monitoring	Same as 1.	Meets CERCLA/SARA goal.	Same as 1.	Same as 1.	Same as 1.	Easily implemented, only need to identify agency responsible for visual inspections.	$ 386,000	No	One environmental group prefers this alternative until completion of the RI/FS for operable unit one.
3. Onsite Land Disposal in RCRA Landfill	Provides overall protection with institutional controls necessary.	Satisfys ARARs.	Will reduce long-term risks. Economic value of land will be forfeited.	Does not reduce toxicity or volume. Reduces mobility by containment.	Removal of liner during excavation and construction activities will increase contamination exposure and noise.	Easily implemented. Trained personnel to construct landfill in compliance with RCRA are readily available.	$11,498,000	No	No Comment.
4. Offsite Land Disposal in RCRA Landfill	Provides overall pro- with greater regulatory controls and long-term maintenance.	Satisfys ARARs.	Contaminated waste removed from site will provide long-term effectiveness.	Same as 3.	Same as 3. In addition, risks increases during transportation to offsite landfill.	Easily implemented. Identification of offsite landfill willing to accept waste is becoming more difficult as LDR are developed.	$10,043,000	No	A local community group prefers lowest cost alternative.
5. Onsite Incineration/ Offsite Disposal of Ash in RCRA Landfill	Provides overall protection via a permanent remedy.	Exceeds ARARs.	Provides long-term effectiveness.	Reduces toxicity, mobility & volume.	Same as 3 during excavation of stockpile.	Mobile incinerators are readily available.	$20,645,000	No	No comment.
6. Onsite Incineration/ Onsite Disposal of Ash in RCRA Landfill	Same as 5.	Exceeds ARARs.	Same as 5.	Same as 5.	Same as 3.	Same as 5.	$20,770,000	No	No comment.
7. Offsite Incineration/ Offsite Disposal of Ash	Same as 5.	Exceeds ARARs.	Minimal risks anticipated during transportation, otherwise provides long-term effectiveness & permanence.	Same as 5.	Same as 3.	High demand for offsite thermal treatment decreases availability of offsite facilities.	$75,969,000	No	No comment.
8. Onsite Incineration/ Onsite Non-RCRA Land Disposal of Ash	Same as 5.	Exceeds ARARs.	Effective in the long-term and is a permanent remedy.	Same as 5.	Same as 3.	Same as 6.	$14,533,000	Yes. See concurrence letter attached.	No comment.

7.0 The Selected Remedy

The selected remedy is Alternative 8. This operable unit will initiate action at the site while additional information is developed and evaluated for operable unit one. The selected remedy includes:

- o excavation of pesticide-contaminated soil and debris from the stockpile, transfer of the waste materials to a temporary waste feed homogenizing area and homogenize them;
- o thermal treatment of 22,000 cubic yards of the homogenized wastes in a RCRA-compliance on-site mobile thermal treatment facility;
- o on-site treatment of process wastewater or scrubber blowdown sludge by reinjection into the thermal treatment facility;
- o sample collection and analysis of the residual ash to confirm the effectiveness of thermal treatment technology; and
- o on-site disposal of the residual ash which is stabilized, relatively inert, non-hazardous, non-reactive and non-corrosive.

Operation of a mobile thermal treatment facility will be in compliance with RCRA regulations (particularly, Subpart O, 40 CFR 264) and will comply with all required RCRA performance standards. The mobile thermal treatment facility and its air pollution control train will be operated so that:

- o the thermal treatment facility will be capable of achieving a destruction and removal efficiency (DRE) of 99.99% for all designated principal organic hazardous constituents (POHCs); and
- o the air pollution control system will achieve performance standards, which are defined as (1) hydrogen chloride less than 4 pounds per hour and (2) particulate matter of less than 0.08 grains per dry cubic foot in the exhaust gas corrected to 7 percent oxygen content.

Under this alternative, the closure plan for remediation of this operable unit will provide for:

- o demobilization of the onsite mobile thermal treatment facility, the air pollution control system, and miscellaneous support components;
- o decontamination and decommissioning of the temporary storage area and miscellaneous tanks and support equipment; and
- o revegetation of disturbed areas.

Although the actual acquisition of a Federal or State operational permit under CERCLA/SARA §121(e) for the on-site Superfund thermal treatment facility would not be required, all of the regulatory requirements equivalent to the permit conditions must be met. Thermal treatment will destroy pesticides in the stockpile and thus eliminate further exposure. Air emissions from the treatment facility would be controlled in total compliance with applicable emission standards and regulations. Therefore, no significant health risks from air emissions is projected.

The onsite land disposal of residual ash will occur concurrently with the thermal treatment operation. Cleanup criteria established for the stockpile are to background levels which will be protective, and the RCRA EP toxicity levels established in 40 CFR 261.24. Land Disposal Restrictions will not apply. Specifically, these restrictions will no longer be an ARAR for the residual ash because the ash from the thermal treatment of the contaminated soil and debris will not be EP toxic and the HOC level will be reduced far below 1000 mg/kg by the required technology of thermal treatment (40 CFR 3 268.32 and 268.42). LDR are not relevant and appropriate when CERCLA contaminated soil and debris contain no restricted waste, until such time as separate treatment standards for soil and debris are promulgated (OSWER Directive No. 9347.2-01, June 5, 1989). On this basis, residual ash from treatment of the soil and debris would not be subject to LDR. The ash, fly ash, and/or sludge, after testing for confirmation of compliance with RCRA corrosivity and EP toxicity standards and conformity to background levels, will be disposed of in an onsite, below-grade landfill. Background levels at the Fairway Six Disposal Site have been determined to contain 2.3 mg/kg total pesticides.

As a condition of State concurrence (see Attachment 2) the remedial design will involve sample collection and analysis of onsite residual ash from the 1986 test burn. The TCLP extraction method will be used to determine if cleanup to drinking water standards is an appropriate cleanup criteria. After thermal treatment of the contaminated soil and debris, if sample analysis reveals that the material in the stockpile remain hazardous, they will be disposed of in an off-site RCRA permitted hazardous waste facility. Likewise, any hazardous substances which cannot be thermally destroyed (drums, unscreenable metal material, etc.) will also be disposed of offsite.

This alternative will take about 6 months to procure an on-site mobile thermal treatment facility and an additional 13½ half months to complete the remedial action. Cost for this alternative is estimated to be $14,533,000. Table 7 provides a breakdown of the cost estimate for this alternative.

TABLE 7
ESTIMATED COST SUMMARY FOR THE SELECTED REMEDY

Capital Costs	Cost
Access Improvement and Security	$61,200
Waste/Soil Excavation	$630,000
Site Preparation	$111,000
Below-Grade Landfill for Incinerator Ash	$39,300
Onsite Thermal Treatment/Air Pollution Control	$9,200,000
Start-Up Cost	$77,000
Estimated Capital Cost	$10,118,500
Level of Health/Safety Protection	$1,012,000
Health & Safety Monitoring	$223,000
Subtotal	$11,353,500
20% Contingency	$2,271,000
Institutional and Engineering	$908,000
Total Estimated Capital Cost	$14,533,000

8.0 Statutory Determinations

The U. S. EPA and the North Carolina Solid Waste Management Section believe that this remedy will satisfy the statutory requirements of providing protection of human health and the environment, attain applicable or relevant and appropriate requirements of other environmental statutes, will be cost-effective and will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

8.1 Protection of Human Health and the Environment

The selected remedy, Alternative 8, provides adequate protection of human health and the environment by permanently eliminating the pesticide contaminants found in the soil and debris in the existing stockpile.

Thermal treatment of the contaminated material in a RCRA-approved facility on-site will eliminate the threat of public exposure to the pesticide comtaminants in the stockpile. The use of proper air pollution control devices and proper handling of scrubber water and residual ash will further reduce the release of site contaminants into the environment.

No unacceptable short-term risks or crossmedia effects will be caused by the implementaiton of the remedy.

8.2 Attainment of ARARS

The selected remedy will attain Federal and State ARARs. The thermal treatment technology will attain the RCRA requirements under 40 CFR §§ 264.340, 264.341, 264.342, 264.343, 264.345. Technological requirements of Land Disposal Restriction regulations are being considered in selection of thermal treatment technology; this technology will attain RCRA requirements under 40 CFR §§ 268.32 and 268.42.

8.3 Cost Effectiveness

Alternative 8 is the most cost-effective alternative that provides protection to public health and the environment in the short- and long-term and meets or exceeds all ARARS.

This remedy is a proven technology and can be readily implemented. This alternative uses a technology which is proven for the permanent destruction of organic contaminants. Test results from the 1986 trial test burn at the site indicate that applicable performance standards were and can be met.

Onsite thermal treatment and onsite disposal of residual ash provides a permanent, onsite solution, would not require long-term environmental monitoring and represents a reasonable value for the money.

8.4 Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

The alternative selected provides a cost-effective long-term permanent remedy, which will significantly and reliably reduce the toxicity and mobility of hazardous contaminants of concern at the site to a level that is protective of human health and the environment. Because of the high soil content of the wastes, physical volume reduction is not expected to be high.

8.5 Preference for Treatment as a Principal Element

This alternative does offer opportunities to meet the three principal CERCLA/SARA and NCP objectives of reducing waste volume, toxicity, and mobility by way of the thermal treatment technology. The thermal treatment technology is the Best Demonstrated Available Technology for eliminating organic contaminants and their toxicity and, consequently, the associated environmental mobility problem.

Attachment (1)
Responsiveness Summary

Final Responsiveness Summary

The U.S. Environmental Protection Agency (EPA) established a public comment period from May 16, 1989 through June 6, 1989 for interested parties to comment on EPA's Proposed Remedial Action Plan for the second Operable Unit at the Fairway Six Disposal Site.

EPA held a public hearing on May 16, 1989 in Aberdeen, North Carolina to describe the remedial alternatives developed and present EPA's preferred remedial alternative for the Fairway Six Disposal Site.

A responsiveness summary is required by Superfund policy for the purpose of providing EPA and the public with a summary of citizen comments and concerns about the site, as raised during the public comment period, and EPA's comments to those concerns. All of the comments summarized in this document have been factored into EPA's final decision.

This responsiveness summary for the Fairway Six Disposal Site is divided into the following sections:

* Background on Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during remedial planning activities at the Fairway Six Disposal Site.

* Summary of the Major Questions and Comments Received During the Public Comment Period and EPA Responses. This section presents both oral and written comments submitted to EPA during the public comment period, and provides EPA's response to these comments.

* Correspondence. This section serves as an attachment for correspondence received and responded to during the public comment period.

I. Background on Community Involvement and Concerns

The Aberdeen community has been aware of the pesticide contamination problem at the Fairway Six Disposal Site for a number of years. In response to a tip from an employee of the Town of Aberdeen, the N.C. Solid and Hazardous Waste Management Branch investigated the site for surface and subsurface soil contamination in October 1984. Then in July 1985, the U.S. EPA Region IV conducted the first of two removal actions at the site to eliminate surface and subsurface contamination. Community involvement with the site increased after EPA announced that Superfund financed cleanup of the site would take place. Newspaper and television coverage of the cleanup activities was extensive during the removal activities and helped to broaden the level of interest on a regional as well as local scale. In December 1986, a trial test burn was conducted at the site. Prior to the trial burn, approximately twenty-five (25) Federal, State and local officials met in Aberdeen to discuss the test burn. The public was invited to this meeting and questions concerning the test burn were received from the public and were responded to by EPA officials. Some of the concerns expressed by citizens during this meeting included atmospheric contamination as a result of the test burn, effect of lindane in Municipal Well No. 1, the frequency of testing of the Aberdeen water supply system, and the extent to which the contaminants had traveled.

A public meeting followed on March 12, 1987 to discuss results of the trial test burn. This public meeting was sponsored by the League of Women Voters of Moore County-Hazardous Waste Unit and the purpose of the meeting was to inform the public of past activities, including the trial burn results, and anticipated future activities. EPA staff provided answers to questions and discussed available data on the site.

The second response action took place from August 1988 through October 1988. This response action involved excavation of four trenches containing pesticide contaminated soil and debris. An availability session was held on July 18, 1988 to inform local citizens of the RI/FS process, discuss the upcoming removal activities, and to answer any questions or concerns the citizens may have expressed. Of most concern to the citizens was the threat of pesticide contamination to their drinking water, chronic health effects of pesticides and enforcement action being taken against the potentially responsible parties (PRPs). A good job was done in informing those that were interested in the site and no one appeared to have left the meeting unsatisfied.

On May 16, 1989, a public meeting was held in Aberdeen at the Aberdeen Middle School to present to the public EPA's proposed plan to remedy soil contamination at the Fairway Six Disposal Site (operable unit two). Fact sheets were provided as well as handouts of the slide presentation and self-addressed comment cards.

II. Summary of Major Questions and Comments Received During the Public Meeting and Comment Period and EPA Responses.

The public meeting held on May 16, 1989, began at 7:00 P.M. and was adjourned at 8:30 P.M. The forty attendees consisted of Federal, State and local officials, local citizens and local and regional reporters.

The community expressed concerns about obnoxious gases emmitted during thermal treatment, the nature of residual ash from the incinerator facility and the State of North Carolina's cost share for this remedial action.

Also, EPA received two letters, one from the League of Women Voters of Moore County and one from the Clean Water Fund of North Carolina. Responses were provided to each organization and are part of this Responsiveness Summary (See correspondence attached). Below is a summary of EPA responses to concerns raised at the public hearing and to written comments received by EPA.

The two most significant comments received at the public meeting concerned air emissions from the thermal treatment process and the nature of the incinerator residue. EPA responded to the concern of obnoxious fumes emmitting from the incinerator by explaining that the incinerator would be required to demonstrate its capablity of complying with strict RCRA air emmission standards. Ms. Melanie McDonald, a local citizen, was concerned that the onsite disposal of incinerator ash would not be safe to allow children to play in. EPA responded by explaining that the residual ash will be tested to verify that the ash is no longer hazardous and that if the test results indicate that the thermal treatment has not meet the cleanup criteria, then the ash will have to be placed elsewhere, solid waste disposal facility or RCRA facility. Cleanup criteria includes the EP Toxicity test and cleanup to background levels, which are 2.3 mg/kg total pesticides.

Mr. Calvin Little, one of the site property owners, was concerned that a RCRA landfill constructed on site, would cause considerable loss in economic value of his property. EPA discussed this concern hypothetically since the proposed plan did not involve the construction of an on site RCRA landfill. The existing stockpile is located on Mr. Little's property.

A local reporter for the Citizen's News Record, Claudia Madeley, was interested in the State's position on providing its 10 percent cost-share for the 14-million dollar proposed remedy. Ms. Lee Crosby, Head of the NC Superfund Branch responded by stating that the State was aware of the 10% cost-share and that the NC Legislature was drafting a certified budget which would address this particular issue. Should the State not be able to fund its cost-share for this remedial action, the remedial action would not be carried out by EPA until funding would become availabe from the State.

In addition, other general comments were received concerning groundwater monitoring activity ongoing at the site, the recently filed lawsuit against five defendants by the Department of Justice on behalf of EPA Region IV, and the Route 211 site. EPA explained that the remedial investigation for operable unit one was ongoing and this investigation included installation of monitoring at various sites throughout Aberdeen including the Fairway Six Site. EPA also explained that a lawsuit had been filed in Federal District Court in Greensboro, North Carolina and that five defendants had been named in the lawsuit. Susan McConnell, a concerned citizen was unaware of the Route 211 Site and asked EPA to discuss this dump site. Mr. Ned Jessup, EPA OSC provided detailed information on the location, history and status of this dump site.

A comment from the floor was made from that the public was not adequately informed about the meeting. Claudia Madeley of the Citizen's News Record responded by saying that an advertisement announcing the meeting time and place had been in the Citizen's News Record three times prior to the meeting.

Written comments were provided to EPA by the League of Women Voters of Moore County and the Clean Water Fund of North Carolina. Each group had similar concerns relating to air emissions from the thermal treatment facility, metal concentrations in the stockpile and the State of North Carolina's requirement that a permit be issued to operate the thermal treatment facility. EPA responded by explaining that the facility must operate under strict RCRA performance standards. EPA is aware that NC is currently proposing air emission standards and will consider those standards during the remedial design phase. Concerning metals, it is apparent from sample analysis of the stockpile that low levels of arsenic, barium, chromium, copper, lead, and zinc are present in the waste. However, it appears that these levels are representative of background in the Aberdeen area and pose no significant risk to public health or the environment. EPA also explained that CERCLA, as amended by SARA, does not require that a permit be obtained from a Federal, State or local office for the portion of a remedial action conducted on-site.

III. Correspondence.

Attached are the written comments received by EPA during the 21 day comment period and responses provided by EPA to the comment writers. Also attached is correspondence from Congressmen Bill Hefner.

League of Women Voters of Moore County
Post Office Box 673, Aberdeen, North Carolina 28315

June 2, 1989

Ms Kay Crane, Remedial Project Manager
U.S. EPA - Region IV
345 Courtland Street NE
Atlanta, GA 30365

Re: Disposal Site (Operable Unit 2) Aberdeen, North Carolina

Dear Ms Crane:

The League of Women Voters of Moore County is pleased to provide commentary in response to the invitation extended by the EPA at their May 16th public meeting. We regret that we cannot support the EPA's Preferred Alternative No. 8 for the disposal of toxic wastes at Fairway Six Disposal Site (Operable Unit 2), Aberdeen, North Carolina.

The reasons that we cannot support the suggested Alternative No. 8 are:

1. The Feasibility Study fails to account for potential air pollutants associated with the incineration of the wastes. We have learned that heavy metals are also present in the waste. No evidence is presented regarding the fate of these heavy metals during incineration. Further, no mention is made of the North Carolina permit process which would apply to ordinary persons incinerating hazardous wastes, even though the Feasibility Study stated that the process was intended to comply with Applicable or Relevant and Appropriate Requirements (ARARS).
2. As we understand RCRA (Resource Conservation and Recovery Act), the use of a non-RCRA landfill is not acceptable for the disposal of hazardous wastes, even though they have been treated. Has EPA followed the procedures necessary to receive a waiver of these requirements? If a RCRA landfill must be used for the disposal of the incinerated residue, then it would appear that incineration is an extremely expensive (probably unwarranted) way of reducing the volume of waste. No cost benefit data are presented to answer this question.

The League of Women Voters of Moore County has diligently studied this issue for some four years and we believe we have sufficient information to warrant a firm opinion in this matter. It is our view that the only economically feasible and environmentally sound method of disposal is that described as Alternative No. 4 (Offsite Land Disposal in a RCRA Permitted Landfill). The No. 4 Alternative makes moot the issues of air pollution, state permits and the ARARS. It also is the most economical and acceptable disposal method among those offered by EPA, at a cost estimated by EPA at $10,043,000 as against $14,634,000 for Alternative No. 8.

Sincerely,

Charlotte Gantz, Chairman
Hazardous Waste Unit

Phyllis Kalk, President

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

JUN [illegible] 1989

4WD-SFB

Ms. Phyllis Kalk, President
League of Women Voters of Moore County
P.O. Box 673
Aberdeen, North Carolina 28315

RE: Fairway Six Disposal Site
Aberdeen, Moore County, North Carolina

Dear Ms. Kalk:

This letter is in response to your letter dated June 2, 1989 in which the League of Women Voters of Moore County provided comments to EPA's proposed plan for remedy action selection at the subject site. A response is provided for each comment.

1) Comment: The FS fails to account for potential air pollutants associated with the incineration of the wastes.

   Response: The thermal treatment facility would operate under performance standards of the Resource Conservation and Recovery Act (RCRA). EPA has developed standards that place strict limits on the quantities of pollutants in emissions from thermal treatment facilities. A trial test burn will be performed prior to commencing the full scale remedial action to demonstrate that the thermal treatment facility is capable of meeting RCRA performance standards.

2) Comment: We have learned that heavy metals are also present in the waste. No evidence is presented regarding the fate of these heavy metals during incineration.

   Response: Sample analysis of the stockpile indicates that metals are present in the waste stream. However, these levels appear to be representative of background in the Aberdeen area. Based on the information available to EPA, metal concentrations in the stockpile pose no significant health concern to the public or the environment. Monitoring will be performed throughout the remedial action to assure the metal concentrations do not become a problem.

3) Comment: No mention is made of the North Carolina permit process which would apply to ordinary persons incinerating hazardous waste, even though the Feasibility Study stated that the process was intended to comply with ARAR's.

Response: Although EPA will comply with ARAR's, Subsection 121(e) of CERCLA, as amended by SARA, states that "[n]o Federal, State or local permit is required for the portion of any removal or remedial action conducted entirely onsite, where such remedial action is selected and carried out in compliance with this section."

4) Comment: As we understand RCRA, the use of a non-RCRA landfill is not acceptable for the disposal of hazardous waste, even though they have been treated. Has EPA followed the procedures necessary to receive a waiver of these requirements?

Response: The waste materials in the stockpile are classified as a RCRA hazardous waste by characteristic. The characteristic of EP Toxicity for the pesticide lindane is evident in the waste stream. Your understanding is correct only if the waste is a RCRA listed waste in which case the waste would have to be delisted in order to dispose of the residual ash in a non-RCRA landfill. EPA has determined that the contaminated soil and debris is a RCRA waste by characteristic and will treat the waste such that the waste no longer exhibits the EP toxicity characteristic. EPA has determined that the thermal treatment technology can adequately detoxify the waste and eliminate or reduce the waste constituents to a level equal to or less than background.

5) Comment: If a RCRA landfill must be used for the disposal of the incinerated residue, then it would appear that incineration is an extremely expensive (probably unwarranted) way of producing the volume of waste. No cost benefit data are presented to answer this question. The No. 4 Alternative makes moot the issues of air pollution, state permits and the ARARS. It also is the most economical and acceptable disposal method among those offered by EPA, at a cost estimated by EPA at $10,043,000 as against $14,634,000 for Alternative No. 8.

Response: Your recommendation of Alternative 4, offsite land disposal, although the most economical, does not meet CERCLA/SARA's preference to use permanent cleanup methods, calling for detoxifying wastes whenever possible, rather than burying them in landfills.

Subsection 121(e) of CERCLA, as amended by SARA, states

> "Remedial actions in which treatment permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances, pollutants and contaminants as a principal element, are to be preferred over remedial actions not involving such treatment. The offsite transport and disposal of hazardous substances or contaminated materials without such treatment should be the least favored alternative remedial action where practicable treatment is available."

Moreover, with stringent Land Disposal Restrictions, it is becoming more difficult to locate a hazardous waste facility which would accept this waste without prior treatment.

I hope this response adequately addresses concerns of the League of Women Voters. Do not hesitate to contact me if you have any further questions.

Sincerely

Kay L. Crane
Remedial Project Manager
Waste Management Division

Clean Water Fund of North Carolina

112 North Person Street • Raleigh, North Carolina 27601 • 919 832-7491
138 East Chestnut Street • Asheville, North Carolina 28801 • 704 251-0518

6-2-89

Kay Crane
US EPA Superfund Program
Region 4
345 Courtland Street NW
Atlanta, Georgia 30365

Dear Ms. Crane,

Enclosed are comments on the prposed remedial alternative for the Fairway 6 Superfund Site at Aberdeen, NC. In reviewing the draft Feasability Study, we felt that there are still a number of unanswered questions regarding both the composition of the Waste Pile at Fairway 6, as well as the applicability of potentially relevant permits and regulations, which cannot wait to be answered during the remedialdesign phase.

In addition to these concerns, it would seem important from an economic feasibility perspective to postpone the proposed work at Fairway 6, until an overall remedy can be crafted for the entire Aberdeen Site, which may involve some of the remedial alternatives which are proposed for Fairway 6. Since there continue to be a number of environmental and public health concerns regarding the incineration and burial method chosen by EPA for this site, we hope that you will postpone making a final decision on the proposed remedy and delay the issuance of a formal Record of Decision (ROD) for the Operable Unit No. 2 at Fairway 6 in Aberdeen, NC.

Sincerely yours,

Joseph T. Hughes

Joseph T. Hughes Jr. MPH

COMMENTS ON THE FEASABILITY STUDY
FOR CLEANUP OF THE FAIRWAY SIX DISPOSAL SITE
ABERDEEN PESTICIDE DUMPS NPL SITE
MOORE COUNTY, NC

At a public meeting held on May 16, 1989, the EPA Region 4 Superfund Office proposed a plan to incinerate 22,000 cubic yards of pesticide contaminated soil which have been excavated at the Fairway Six Operable Unit Number 2 and to bury the expected large volume of incinerator ash in an on-site, non-RCRA permitted landfill. This proposed treatment and disposal method was chosen by EPA from among a number of other remedial alternatives.

The selection of Alternative No. 8 (Onsite Incineration and Onsite Disposal of Ash in a Non-RCRA Landfill) as the preferred remedial alternative is a flawed decision because it is not based on the SARA/CERCLA criteria of effectiveness in protecting human health and the environment, it does not have an adequate data base upon which to judge the technical feasability and reliability of the chosen remedial alternative, and lastly, it will not be in full compliance with the applicable state and federal environmental and public health laws and regulations.

For these primary reasons, as well as the additional elaboration below, the on-site incineration and burial proposal for the Fairway Six site (Alternative #8) should be postponed by the EPA until an overall decision is made for the permanent treatment and remediation of the entire Aberdeen Pesticide Dumps site, which may in itself, involve the additional treatment and disposal of additional pesticide-contaminated media in soil, surface and ground water. During the interim period of developing permanent remedial alternatives for the entire Aberdeen site, the EPA shall implement a regimen of periodic monitoring and inspection of the Operable Unit 2 Waste Pile at Fairway Six, as is suggested by Alternative #2.

In discussing the compliance of the proposed remedial alternative with Applicable or Relevant and Appropriate Requirements (ARAR's), as is required by the National Contingency Plan (NCP), the EPA neglects to even discuss the existence of current and proposed state of North Carolina environmental regulations, which would be applicable to the proposed remedial action at Operable Unit #2 in Aberdeen. The NC Division of Environmental Management's Air Quality Section currently requires a permit for the operation of an incinerator which will discharge particulates and toxins into the ambient atmosphere. The EPA draft Feasability Study does not even discuss or consider the applicability of such state requirements to the proposed action.

In addition to the state requirement of obtaining an air quality permit, the state DEM, at the direction of an Executive Order from Governor James Martin, is in the process of adopting permanent regulations which will govern both general air toxics emissions, as well as the emissions from hazardous waste incinerators, such as the one which is proposed for the thermal treatment of the pesticide-contaminated soil in Aberdeen. In order to protect human health and the environment, we would like to request that the EPA demonstrate that the operation of the proposed mobile rotary kiln incinerator will be in compliance with all of the proposed air toxics regulations, which will probably be formally adopted by the state Environmental Management Commission even before the pesticide burning in Aberdeen is completed.

Since the state of North Carolina is being asked to contribute almost $1.5 million in tax dollars to this EPA burn and bury plan, it seems only fair that the EPA would make a minimal showing to comply with our existing and proposed environmental regulations. This would also seem to be the basic Congressional intent in assuring that the remedial actions which are taken at any National Priority List (NPL) Superfund site will comply with any state law, regulation or requirement.

In addition to the health and environmental concerns with the emissions which will result from burning pesticide-contaminated soil, there are major unanswered questions about the burial of contaminated incinerator ash in the non-RCRA permitted landfill, which cannot be ignored and postponed until the remedial design phase. Soil samples from the bottom of the excavated trenches at the Fairway Six site, which were taken by EPA during September, 1988, indicate that the dirt which the EPA is proposing to incinerate at Aberdeen is contaminated with more than just organochlorine pesticides such as lindane, DDT and toxaphene.

Trench bottom samples from Fairway Six (EPA WA# 88-618) indicate that the excavated soil is contaminated with such inorganic compounds as arsenic, aluminum, lead, chromium, copper, cyanide and cadmium. These EPA priority pollutants would be expected to remain in the incinerator ash even after thermal treatment and make the efficacy of the proposed burial plan extremely suspect. The trench samples also indicate the presence of PCB's, as well as a number of volatile organic chemicals such as toluene, methyl ethyl ketone, carbon tetrachloride, and methylene chloride. No where in the Feasability Study is there even a discussion of how the proposed thermal treatment of all of these contaminants will effect both the possible ambient emissions from the mobile incinerator, as well as the potential EP (Extraction Procedure) toxicity of the resulting incincerator ash and its unsuitability for burial in an extremely porous soil in the Sandhills region.

These test results, which confirm the contamination of fish, sediment, and surface water at Pages Lake in Aberdeen, raise the question of the risks which may be faced by children and adults who use the Pages Lake recreation area on the regular basis. The fact that these test results have not been reported back to either Congressman Hefner or to the local residents of Aberdeen also raise questions about the reliability of EPA in protecting citizens' health. We would like to request that the EPA provide further information to local citizens about the protocol utilized in sampling Pages Lake area, the location of the sampling taken and reported in the FS, the parameters sampled for, and the minimum detection limits utilized in analyzing the sediment, surface water and fish tissue samples.

We would also like a risk assessment opinion from the EPA or CDC about the potential exposure pathways for the recreational users of the Pages Lake area and any suggestions for limiting or eliminating exposure to potentially cancer-causing toxic substances which have been found in the area. These tests results also throw into question the EPA's determination that the buried materials at the Twin Sites on the hill above Pages Lakes do not represent any acute health or environmental risks. Because the levels of lindane contamination in the surface water have risen a number of orders of magnitude over the past two years, since samples were taken by the Town of Aberdeen in Pages Lake, we would like to question whether the EPA should consider undertaking a removal action on the buried material which remains at the Twin Sites above the lake, in order to stabilize the increasing levels of contamination of Pages Lake and reduce the risks faced by the local citizens who use the lake.

Fairway Six Disposal Superfund Site
Public Meeting Response Card

Name: Joseph T. Hughes Jr.
Clean Water Fund of NC
Address: PO Box 1008
City: Raleigh State: NC Zip: 27602

:Please add my name to the mailing list. ✓

:Please respond to the following question/comment (Include name and address for a response.) ✓

Question/Comment: We would like to request that the proposed burn + bury plan for Fairway #6 site be postponed until a remedial alternative is adopted for the entire Aberdeen Site, based on the enclosed comments. More work needs to be done by EPA to sample residuals + obtain necessary permits.

N.C. May Have No Say in Pesticide Burning

State Officials Say That EPA Needs Permit; EPA Says That It Doesn't in Emergency

By Terry Martin
JOURNAL RALEIGH BUREAU

RALEIGH

North Carolina's pending regulations for incinerators may come too late to apply to the federal government's plans to burn hazardous waste in Moore County.

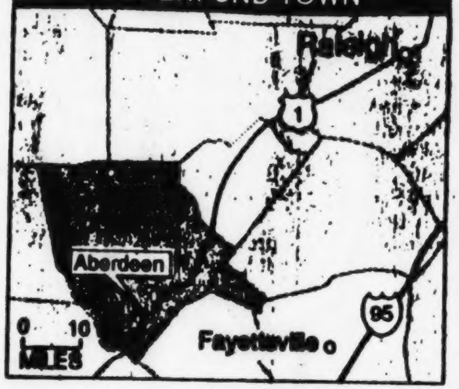
But a simmering issue of equal importance is whether the state has any say at all over what the U.S. Environmental Protection Agency proposes to release into the air when it starts burning pesticide waste at a Superfund site near Aberdeen.

State officials say that the EPA must get an air-quality permit from the N.C. Division of Environmental Management before it fires up either of two proposed mobile incinerators to 2,200 degrees Fahrenheit to destroy hazardous waste on the grounds of a golf course.

Federal regulators say that's a needless bother that could delay cleaning up a waste site that traces back to 1936.

N.E. "Ned" Jessup is the EPA's on-scene coordinator for the former pesticide dump, now an enclosed mound along the sixth fairway of The Pits golf course. The course is west of Aberdeen along N.C. 5.

SUPERFUND TOWN



JOURNAL GRAPHIC BY JIM STANLEY

"We don't need state permits for the EPA to clean up a site under emergency action," Jessup said in an interview Tuesday night at a public hearing in Aberdeen.

But state officials, who say this would be the first extensive use of an incinerator to clean up a federal Superfund site in North Carolina, see the matter differently.

N. Ogden Gerald, the chief of the N.C. Air Quality Section, says that the EPA never completed the paperwork on a state permit application in 1986 when it allowed a private contractor to conduct test burns at the site.

"They didn't submit enough information on that application and don't have an application pending," Gerald said in an interview in Raleigh. "We have insisted that they need a permit and that is still our position."

In those tests in December 1986, 6 tons of pesticide-tainted soil and packaging were incinerated.

This time, the mound consists of 27,500 tons and stands 30 feet high.

See PESTICIDE, Page 4

INSIDE TODAY

CLEVER SHOPPING: Consult shows how to buy a 10-outfit wa robe for $200. **Page 31.**

ACCENT	31-[illegible]	[illegible]NERS	
ADVICE	[illegible]	[illegible]	
BRIDGE	[illegible]	[illegible]	
BUSINESS	34-37	[illegible]	
CALENDAR	22	SIDES[illegible]	
CLASSIFIED	43-60	[illegible]	
COMICS	28, 29	[illegible]	
CROSSWORD	28	[illegible]	38
EDITORIALS	12, 13	[illegible]	35
FILMS	22	TELEVISION	
HOROSCOPE	29	TRIVIA	

WEATHER: Mostly sunny. High the mid-70s; low in the upper 5 **Page 3.**

PESTICIDE

Continued From Page 1

Under the EPA's proposal, the sandy soil — full of remnants of DDT, DDD, toxaphene, lindane and chlordane — would be burned at the site.

Kay Crane, the EPA's remedial project manager, says that the extreme temperature would destroy the toxic organic chemicals, cleanse the sand, and reduce the volume of the waste — by about one-fourth.

Residents want assurances that the burning, which could start late this year and take five months, will be thorough — and safe.

Elizabeth Melhuish of Aberdeen told EPA officials, "When I burn a chicken in the oven, there is certainly an odor. Are there going to be odors coming from this incinerator?"

Jessup said that no toxic fumes would be released and that most of the emissions would be carbon monoxide, carbon dioxide and steam.

James D. Sheppard Jr., a spokesman for the N.C. Division of Environmental Management, said that the best way to control those emissions is through the permit process.

"EPA has exempted itself through its own rules from having to obtain a state permit," Sheppard said. "We question the legality of that, we would prefer that they get a permit and we plan to pursue that through Region Four (the EPA's Southeast office in Atlanta)."

If that prompts delays, the EPA may face a new set of state regulations governing incinerators. The regulations are to take effect Dec. 1 for 69 pollutants and apply to commercial incinerators that burn more than 250 pounds of waste an hour.

The EPA has a public comment period through June 6 for remarks about seven different proposals for cleaning up the Aberdeen site, costing from $386,000 to $76 million.

The proposed option is a $14.6 million plan to burn the waste and bury the residue at the golf course, which is built atop waste trenches formerly used by Grower Service Corp., Farm Chemicals Inc., the former Taylor Chemical Co. and the former Geigy Chemical Co.

The state would be liable for a 10th of the cost of that cleanup, expected to take several years.

Lee P. Crosby, who heads the state's Superfund branch, said that the cost of the Aberdeen cleanup to North Carolina rests on several unresolved issues.

For example, the U.S. Justice Department filed suit in March against Grower Service, Farm Chemicals, Ciba-Geigy Corp., George D. Anderson and J.M. Taylor, a former mayor of Aberdeen, charging that they are liable for the cleanup.

If that suit is successful, the state could likewise file a claim against the defendants to obtain reimbursement for cleanup costs, she said, or compel the guilty parties to clean up the site.

"There are a lot of things yet that have to be worked out," she said.

PEARS
MUSIC
IS
A NEW
• beginn.
Pianos by
2 Locatic
Upper Le
(N
76

economic change was impossible without polit-

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

JUN 30 1989

4WD-SFB

Mr. Joseph T. Hughes, Jr.
Clean Water Fund of North Carolina
112 North Person Street
Raleigh, NC 27601

RE: Fairway Six Disposal Site
Aberdeen, Moore County, North Carolina

Dear Mr. Hughes:

EPA has received comments on behalf of the Clean Water Fund of North Carolina in a letter dated June 2, 1989. A response has been prepared to address each comment or concern of the Clean Water Fund.

1. Comment: Onsite incineration and burial proposal for the Fairway Six Site should be postponed by the EPA until an overall decision is made for the permanent treatment and remediation of the entire Aberdeen Pesticide Dumps Site.

   Response: An overall remedy for Operable Unit One is not scheduled to commence until March [illegible]. Expected completion of the remedial action is February [illegible]. Due to the location of the stockpile, the continuous threat posed by the stockpile if the liner becomes damaged and the environmental and economical impact to the surrounding golf course and proposed residential property, EPA has determined that overall protection of human health and the environment will be accomplished by proceeding with the remedial action for operable unit two.

2. Comment: In discussing the compliance of the proposed remedial alternative with ARARs, as required by the NCP, the EPA neglects to discuss the existence of current and proposed State of NC environmental regulations. The NC DEM's Air Quality Section currently requires a permit for the operation of an incinerator which will discharge particulates and toxins into the ambient atmosphere.

Response: Although EPA will comply with ARARs, Subsection 121(e) of CERCLA, as amended by SARA, states that "[n]o Federal, State or local permit is required for the portion of any removal or remedial action conducted entirely onsite, where such remedial action is selected and carried out in compliance with this section." Even though Subsection 121(e) states that no permit is needed, EPA will follow very strict performance standards. These standards have been developed under RCRA to ensure that thermal treatment is carried out in a safe manner and poses no threat to the health of people living or working nearby or to the surrounding environment.

3) Comment: In order to protect human health and the environment, we would like to request that the EPA demonstrate that the operation of the proposed mobile rotary kiln incinerator will be in compliance with all of the proposed air toxics regulations. The State DEM, at the direction of an Executive Order from Govenor James Martin, is in the process of adopting permanent regulations which will govern both general air toxics emissions, as well as the emissions from hazardous waste incinerators.

Response: Although the feasibility study recommended the rotary kiln as an acceptable type of thermal treatment facility to achieve clean up goals at the site, all types of incinerators will be considered during the bidding phase and contract selection. In addition, the thermal treatment facility will operate under RCRA performance standards, which place strict limits on the quantities of pollutants in emissions from hazardous waste incinerators. A trial test burn will be performed prior to commencing the full scale remedial action to demonstrate that the facility is capable of meeting RCRA performance standards. This remedial action will not commence without consideration of North Carolina's proposed air toxics emissions regulations.

4) Comment: There are major unanswered questions about the burial of contaminated incinerator ash in the non-RCRA permitted landfill. Soil samples from the bottom of the excavated trenches indicate that the excavated soil is contaminated with heavy metals. These heavy metals would be expected to remain in the incinerator ash even after thermal treatment and make the efficacy of the proposed burial plan extremely suspect.

Response: Sample analysis of the stockpile indicate that metals are present in the waste stream. However, these levels appear to be representative of background in the Aberdeen area. Based on the information available to EPA, metal concentrations in the stockpile pose no significant health concern to the public or the environment.

I hope this response addresses the concerns of the Clean Water Fund of North Carolina. Do not hesitate to contact me if you have any further questions or comments.

Sincerely,

Kay L. Crane
Remedial Project Manager
Waste Management Division

Response: Although EPA will comply with ARARs, Subsection 121(e) of CERCLA, as amended by SARA, states that "[n]o Federal, State or local permit is required for the portion of any removal or remedial action conducted entirely onsite, where such remedial action is selected and carried out in compliance with this section." Even though Subsection 121(e) states that no permit is needed, EPA will follow very strict performance standards. These standards have been developed under RCRA to ensure that thermal treatment is carried out in a safe manner and poses no threat to the health of people living or working nearby or to the surrounding environment.

3) Comment: In order to protect human health and the environment, we would like to request that the EPA demonstrate that the operation of the proposed mobile rotary kiln incinerator will be in compliance with all of the proposed air toxics regulations. The State DEM, at the direction of an Executive Order from Govenor James Martin, is in the process of adopting permanent regulations which will govern both general air toxics emissions, as well as the emissions from hazardous waste incinerators.

Response: Although the feasibility study recommended the rotary kiln as an acceptable type of thermal treatment facility to achieve clean up goals at the site, all types of incinerators will be considered during the bidding phase and contract selection. In addition, the thermal treatment facility will operate under RCRA performance standards, which place strict limits on the quantities of pollutants in emissions from hazardous waste incinerators. A trial test burn will be performed prior to commencing the full scale remedial action to demonstrate that the facility is capable of meeting RCRA performance standards. This remedial action will not commence without consideration of North Carolina's proposed air toxics emissions regulations.

4) Comment: There are major unanswered questions about the burial of contaminated incinerator ash in the non-RCRA permitted landfill. Soil samples from the bottom of the excavated trenches indicate that the excavated soil is contaminated with heavy metals. These heavy metals would be expected to remain in the incinerator ash even after thermal treatment and make the efficacy of the proposed burial plan extremely suspect.

Response: Sample analysis of the stockpile indicate that metals are present in the waste stream. However, these levels appear to be representative of background in the Aberdeen area. Based on the information available to EPA, metal concentrations in the stockpile pose no significant health concern to the public or the environment.

I hope this response addresses the concerns of the Clean Water Fund of North Carolina. Do not hesitate to contact me if you have any further questions or comments.

Sincerely,

Kay L. Crane
Remedial Project Manager
Waste Management Division

Received 6-26-89 by
SFJ. Kay Crane

W.G. (BILL) HEFNER
8TH DISTRICT NORTH CAROLINA

2151 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON DC 20515
(202) 225-3715
FAX (202) 225-4036

COMMITTEES

COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEE ON DEFENSE

CHAIRMAN SUBCOMMITTEE ON MILITARY
CONSTRUCTION

Congress of the United States
House of Representatives
Washington, DC 20515

DISTRICT OFFICES

P O BOX 385
101 UNION STREET SOUTH
CONCORD NC 28025
(704) 933-1615 or 786-1612

P O BOX 4220
HOME SAVINGS AND LOAN BLDG
507 WEST INNES STREET SUITE 225
SALISBURY NC 28144
(704) 636-0635

P O BOX 1503
230 EAST FRANKLIN STREET
ROCKINGHAM NC 28379
(919) 997-2070

June 21, 1989

Ms. Kay Crane
Remedial Project Manager
U.S. EPA- Region IV
345 Courtland Street NE
Atlanta, GA 30365

Dear Ms. Crane:

I am in receipt of the enclosed copy of a letter to you from the League of Women Voters of Moore County, North Carolina, regarding Disposal Site (Operable Unit 2) Aberdeen, North Carliona. I would appreciate your giving the views as expressed in this letter very serious consideration.

With kindest regards, I am

Sincerely yours,

Bill Hefner

BILL HEFNER
Member of Congress

BH/md

Enclosure

League of Women Voters of Moore County
Post Office Box 673, Aberdeen, North Carolina 28315

June 13, 1989

RECEIVED
JUN 19 1989
BILL HEFNER, M.C.
WASHINGTON D.C.

The Honorable W. G. Hefner
House of Representatives
Washington, DC 20515

Dear Mr. Hefner:

Citizens of Moore County have been invited to comment on the EPA decision for disposal of the pesticide contaminated soil and debris at the Fairway Six Site in Aberdeen, North Carolina. The League of Women Voters of Moore County has been monitoring this issue for about four years and has responded to EPA's request (copy of 6/2/89 letter to EPA enclosed). We want you, as our legislator, to know of our concerns.

The EPA has proposed to handle this pesticide dump by "Onsite Incineration and Onsite Disposal In a Non-RCRA landfill" at a cost of $14,634,000. (Please see Page 7, Table 1 of Superfund Proposed Plan Fact Sheet - Fairway Six Disposal Site (Operable Unit) Aberdeen, North Carolina dated May 1989 from EPA Region IV), also enclosed.)

We have expressed our objections to this proposal for the following reasons:

1.) EPA has not discussed the issue of possible air pollution during the incineration process nor have they, to date, applied for a North Carolina incineration permit.

2.) EPA has not presented any evidence regarding the heavy metals we have learned are present in the waste after incineration.

3.) Regarding EPA's intention to use a "Non-RCRA landfill" for the waste from incineration, RCRA (Resource Conservation and Recovery Act), requires a RCRA approved landfill for disposal of hazardous wastes, even after treatment.

4.) Alternative #4, "Offsite Land Disposal" (page 7, Table 1 of EPA's Fact Sheet) would only cost $10,043,000. Why is EPA wasting $4.5 million by incineration and then leaving material, which is technically, according to RCRA, still contaminated, on site in a non-approved landfill?

We hope you will agree that this matter justifies your and our concern and that you will take steps to assure yourself that EPA is not wasting our money and at the same time not exposing Moore County citizens to possible further health threats.

5

Sincerely,

Phyllis Kalk

Phyllis Kalk, President

vl

Attachment (2)
State Concurrence

Received 6-23-89
by SFB 4:00 pm
Kay Crane

North Carolina Department of Human Resources
Division of Health Services
P.O. Box 2091 • Raleigh, North Carolina 27602-2091

James G. Martin, Governor
David T. Flaherty, Secretary

Ronald H. Levine, M.D., M.P.H.
State Health Director

June 21, 1989

Mr. Greer C. Tidwell
Regional Administrator
US EPA Region IV
345 Courtland Street
Atlanta, Georgia 30365

Dear Mr. Tidwell:

North Carolina appreciates the opportunity to comment on the ROD and looks forward to working with EPA on the final resolution of the problems at this site. The State concurs with the attached draft Record of Decision (ROD) and Remedial Alternative Selection for Operable Unit II, Fairway Six Disposal Site, Moore County, Aberdeen, North Carolina, subject to the following comments, conditions, or exceptions:

1. The State interprets the ROD to be a proposed technical remediation conceptual plan and basically includes thermal treatment by incineration with land disposal of the treatment residues.

2. State concurrence in the Record of Decision and Remedial Alternative Selection is based solely upon the information contained in the attached Record of Decision and Remedial Alternative Selection. Should the State receive new or additional information which significantly affects the conclusions or remedy selection contained in the Record of Decision and Remedial Alternative Selection, it may modify or withdraw this concurrence, effective immediately, upon written notice to EPA Region IV. Such notice shall contain a statement of the reason or reasons for the modification or withdrawal of State concurrence.

3. State concurrence in this Record of Decision and Remedial Action Alternative Selection in no way binds the State to concur in future decisions or commits the State to participate in future activities regarding this site including but not limited, to remedial design selection or State participation, financial or otherwise, in the clean up of the site. The State reserves the right to review, comment and make independent assessments of all future work relating to this site. Concurrence by the State in this Record of Decision

and Remedial Alternative Selection shall not be construed as a commitment by the State to participate in the cleanup of this site or to commit, or request funds from the North Carolina General Assembly for the purpose of committing, State monies towards the cleanup of this site.

4. Air Quality

(a) North Carolina location standards for hazardous waste facilities applicable to incinerators are enclosed for consideration in the air quality part of the Remedial Design. Particular consideration should be given to addressing "risks posed by the proximity of the facility to population centers".

(b) The Remedial Design must include specific data from the actual incinerator device demonstrating how RCRA incineration standards will be met including scrubber water and air control residues.

(c) As part of the proposed remedial design, a modeling plan should be submitted to the State for review and comment. Results of the actual air modeling should be submitted to the State. The basis for the plan and air model should be EPA guidelines or ambient modeling and predict maximum ambient concentrations of the following:

(1) All air pollutants (criteria and non-criteria) governed by the clean air act.

(2) RCRA POHC's (principal organic hazardous constituents) and PIC's (products of incomplete combustion)

(3) All air toxics emitted by the project including toxic air pollutants currently proposed by the State. The State will send EPA a copy of the proposed toxic pollutants. It is anticipated that the proposed air toxics will be adopted by the time this project is initiated.

(4) Significant dust was observed during the trial burn; therefore, fugitive emissions from all materials handling activity should be included in the modeling.

5. Land Disposal

(a) North Carolina location standards for hazardous waste facilities applicable to land disposal are enclosed for consideration in the remedial design.

(b) The site does not meet technical standards for a landfill, however.

(c) The level of treatment may allow landfill disposal at this site.
  (1) The ash from the incinerator should meet all delisting requirements under RCRA.
  (2) In order to meet permanent disposal requirements the ash should not extract greater than drinking water standards under TCLP extraction procedures.

6. Clean up standards

(a) The areas that contain waste should be tested under TCLP extraction standards after waste has been removed.

(b) Clean up standards should be based on TCLP extractions to drinking water standards

Again, the State appreciates the opportunity to comment on the ROD, and we look forward to working with you on the remedial design.

Respectfully yours,

William L. Meyer

William L. Meyer, Chief
Solid Waste Management Section

WLM:br

cc: Paul Wilms

Enclosures

(q) The following are additional location standards for facilities:

(1) In addition to any other location standards set forth elsewhere in these rules, the Department of Human Resources, in determining whether to issue a permit for a hazardous waste management facility, shall consider the risks posed by the proximity of the facility to water table levels, flood plains, water supplies, public water supply watersheds, mines, natural resources such as wetlands, endangered species habitats, parks, forests, wilderness areas, and historical sites, and population centers and shall consider whether provision has been made for adequate buffer zones. The Department shall also consider groundwater travel time, soil pH, soil cation exchange capacity, soil composition and permeability, slope, climate, local land use, transportation factors such as proximity to waste generators, route, route safety, and method of transportation, aesthetic factors such as the visibility, appearance, and noise level of the facility; potential impact on air quality, existence of seismic activity and cavernous bedrock.

(2) The following minimum separation distances shall be required of all hazardous waste management facilities except that existing facilities shall be required to meet these minimum separation distances to the maximum extent feasible.

(A) All hazardous waste management facilities shall be located at least 0.25 miles from institutions including but not limited to schools, health care facilities and prisons, unless the owner or operator can demonstrate that no unreasonable risks shall be posed by the proximity of the facility.

(B) All hazardous waste treatment and storage facilities shall comply with the following separation distances: all hazardous waste shall be treated and stored a minimum of 50 feet from the property line of the facility, except that all hazardous waste with ignitable, incompatible or reactive characteristics shall be treated and stored a minimum of 200 feet from the property line of the facility if the area adjacent to the facility is zoned for any use other than industrial or is not zoned.

(C) All hazardous waste landfills, long-term storage facilities, land treatment facilities, and new surface impoundments shall comply with the following separation distances:

(i) All hazardous waste shall be located a minimum of 200 feet from the property line of the facility;

(ii) No hazardous waste landfill, below-ground long-term storage or surface impoundment facility shall be constructed in such a manner that the bottom of the facility is closer than 10 feet from the historical high groundwater level. The historical high groundwater level shall be determined by measuring the seasonal high groundwater levels and predicting the long-term maximum high groundwater level from published data on similar North Carolina topographic positions, elevations, geology, and climate;

(iii) All hazardous waste shall be located a minimum of 1,000 feet from he zone of influence of any existing off-site groundwater well used for drinking water, and outside the zone of influence of any existing or planned on-site drinking water well.

(D) Hazardous waste storage and treatment facilities for liquid waste that is classified as EP toxic, toxic, or acutely toxic and is stored or treated in tanks or containers shall not be located:

(i) In the recharge area of an aquifer which is designate as an existing sole drinking water source as defined in the Safe Drinking Water Act, Section .1424(e) [42 U.S.C. 300h-3(e)] unless an adequate secondary containment system is constructed, and after consideration of applicable factors in (q)(3) of this rule, the owner or operator can demonstrate no unreasonable risk to public health;

(ii) Within 200 feet of surface water impoundments or surface water stream with continuous flow;

(iii) In an area that will allow direct surface or subsurface or subsurface discharge to AI, AII, or SA waters or a Class III Reservoir as defined in 15 NCAC 2B .02000 and 10 NCAC 10D ,0702(6), which are adopted by reference:

(iv) In an area that will allow direct surface or subsurface discharge to the watershed for a Class I or II Reservoir as defined in 20 NCAC 10D ,0702 (4) and (5), which are adopted by reference;

(v) Within 200 feet of a seismically active area as defined in (c) of this rule;

(vi) Within 200 feet of a mine, cave, or cavernous bedrock.

(3) The Department may require any hazardous waste management facility to comply with greater separation distances or other protective measures necessary to avoid unreasonable risks posed by the proximity of the facility to water table levels, flood plains, water supplies, public water supply watersheds, mines, natural resources such as wetlands, endangered species habitats, pars, forests, wilderness areas, and historical sites, and population centers or to provide an adequate buffer zone. The Department may also require protective measures necessary to avoid unreasonable risks posed by the soil pH, soil cation exchange capacity, soil composition and permeability, climate, transportation factors such as proximity to waste generators, route, route safety, and method of transportation, aesthetic factors such as the visibility, appearance, and noise level of the facility, potential impact on air quality, and the existence of seismic activity and cavernous bedrock. In determining whether to require greater separation distances or other protective measures, the Department shall consider the following factors:

- (A) All proposed hazardous waste activities and procedures to be associated with the transfer, storage, treatment and/or disposal or hazardous waste at the facility;
- (B) The type of hazardous waste to be treated, stored, and/or disposed of at the facility;
- (C) The volume of waste to be treated, stored, and/or disposed of at the facility;
- (D) Land use issues including the number of permanent residents in proximity to the facility and their distance from the facility;
- (E) The adequacy of facility design and plans for containment and control of sudden and non-sudden accidental events in combination with adequate off-site evacuation of potentially adversely impacted populations;
- (F) Other land use issues including the number of institutional and commercial structures such as airports and schools in proximity to the facility, their distance from the facility, and the particular nature of the activities that take place in those structures.
- (G) The lateral distance and slope from the facility to surface water supplies or to watersheds draining directly into surface water supplies;
- (H) The vertical distance and type of soils and geologic conditions separating the facility from the water table;
- (I) The direction and rate of flow of groundwater from the sites and the extent and reliability of on-site and nearby data concerning seasonal and long-term groundwater level fluctuations;
- (J) Potential air emissions including rate, direction of movement, dispersion and exposure, whether from planned or accidental uncontrolled releases;
- (K) Any other relevant factors.

(4) The following are additional location standards for landfills, long-term storage facilities or new hazardous waste surface impoundments:

- (A) A hazardous waste landfill, long-term storage, or a new surface impoundment facility shall not be located:
  - (i) In the recharge area of an aquifer which is an existing sole drinking water source;
  - (ii) Within 200 feet of a surface water stream with continuous flow;
  - (iii) In an area that will allow direct surface or subsurface discharge to AI, AII, or SA waters or Class III Reservoir as defined in 15 NCAC 2B .0200 and 20 NCAC 10D .0702(6) which are adopted by reference;
  - (iv) In an area that will allow direct surface or subsurface discharge to a watershed for a Class I or II Reservoir as defined in 10 NCAC 10D .0702(4) and (5), which are adopted by reference;
  - (v) Within 200 feet horizontally of a 200-year flood hazard elevation;
  - (vi) Within 200 feet of a seismically active area as defined in (c) of this rule;
  - (vii) Within 200 feet of a mine, cave or cavernous bedrock.

- (B) A hazardous waste landfill or long-term storage facility shall be located in highly weathered, relatively impermeable clayey formations with the following soil characteristics:

(i) The depth of the unconsolidated soil materials shall be equal to or greater than 20 feet.
(ii) The percentage of fine-grained soil material shall be equal to or greater than 30 percent passing through a number 200 sieve;
(iii) Soil liquid limit shall be equal to or greater than 20;
(iv) Soil plasticity index shall be equal to or greater than 15;
(v) Soil compacted hydraulic conductivity shall be a maximum of 1.0×10^{-7} cm/sec;
(vi) Soil Cation Exchange Capacity shall be equal to or greater than 5 milliequivalents per 100 grams;
(vii) Soil Potential Volume Change Index shall be equal to or less than 4;
(viii) Soils shall be underlain by a competent geologic formation having a rock quality designation equal to or greater than 75 percent unless other geological conditions afford adequate protection of public health and the environment.

(C) A hazardous waste landfill or long-term storage facility shall be located in areas of low to moderate relief to the extent necessary to prevent landsliding or slippage and slumping. The site may be graded to comply with this standard.

(5) All new hazardous waste impoundments that close with hazardous waste residues left in place shall comply with the standards for hazardous waste landfills in (q)(4) of this rule unless the applicant can demonstrate that equivalent protection of public health and environment is afforded by some other standard.

(6) All new hazardous waste management facilities will construct a minimum of two observation wells, one upgradient and one downgradient of the proposed facility. The purpose of these wells will be to establish background groundwater concentrations for all hazardous wastes that the owner or operator proposes to store, treat, or dispose at the facility and to obtain the relevant information required under 10 NCAC 10F .0034(b)(13)(B).

(7) The owners and operators of all new hazardous waste facilities must demonstrate that the community has had an opportunity to participate in the siting process by complying with the following:

(A) The owners and operators shall hold at least one public meeting in the county in which the facility is to be located to inform the community of all hazardous waste management activities including but not limited to: the hazardous properties of the waste to be managed; the type of management proposed for the wastes; the mass and volume of the wastes; and the source of the wastes; and to allow the community to identify specific health, safety and environmental concerns or problems expressed by the community related to the hazardous waste activities associated with the facility. The owners and operators must provide a public notice of this meeting at least 30 days prior to the meeting. Public notice must be documented in the facility permit application. The owners and operators shall submit as part of the permit application a complete written transcript of the meeting, all written material submitted that represents community concerns, and all other relevant written material distributed or used at the meeting. The written transcript and other written material submitted or used at the meeting must be made available at the local public library closest to and in the county of the proposed site.

(B) For the purposes of this rule, public notice shall include: notification of the boards of county commissioners of the county where the proposed site is to be located and all contiguous counties in North Carolina; a legal advertisement placed in a newspaper or newspapers serving those counties; and provision of a news release to at least one newspaper, one radio station, and one TV station serving these counties. Public notice shall include the time, place, and purpose of the meetings required by this rule.

(C) No less than 30 days after the first public meeting transcript is available at the local public library, the owners and operators shall hold at least one additional public meeting in order to attempt to resolve community concerns. The owners and operators must provide public notice of this meeting at least 30 days prior to the meeting. Public notice must be documented in the facility permit application. The owners and operators shall submit as part of the permit application a complete written transcript of the meeting, all written material submitted that represents community concerns, and all other relevant written material distributed or used at the meeting.

(D) The Department of Human Resources shall consider unresolved community concerns in the permit review process and impose final permit conditions based on sound scientific, health, safety, and environmental principles and authorized by applicable laws or rules. The written transcript and other written material submitted or used at the meeting must be made available at the local public library closest to and in the county of the proposed site.

[Note: Pursuant to G.S. 143B-216.13(5)(10), the Governor's Waste Management Board has established a program to promote public education and public involvement in the decision-making process of the siting and permitting of proposed waste management facilities. The board will assist localities in which facilities are proposed in collecting and receiving information relating to the suitability of the proposed site. At the request of a local government in which facilities are proposed, the board can direct appropriate agencies of state government to develop such relevant data as that locality may reasonably request.]

History Note: Statutory Authority G.S. 130A-294(c);
Eff. November 19, 1980;
Amended Eff. June 1, 1988; February 1, 1988; December 1, 1987; August 1, 1987; May 1, 1987; February 1, 1987; October 1, 1986; July 1, 1986; May 1, 1986; January 1, 1986; October 1, 1985; July 1, 1985; April 1, 1985.

Article 9: Solid Waste Management Law

For additional requirements see the Solid Waste Management Law in Part II of this Publication

G.S. - 130A-292	Conveyance of Land Used for Hazardous Waste Landfill facility to the state.
G.S. - 130A-293	Local ordinance prohibiting hazardous waste facilities invalid; situation to establish facility.
G.S. - 130A-295	Additional requirements for Hazardous Waste Facilities.
G.S. - 130A-296	Limitations on Powers of Local Governments.
G.S. - 130A-301	Recordation of Permits for Disposal of Waste on Land.

Attachment (3)
Administrative Record Index

NCD980843346

ABERDEEN PESTICIDE DUMPS

NPL Site Administrative Record

Index

As of May 11, 1989

Prepared for

Region IV
Waste Management Division
U.S. Environmental Protection Agency

With Assistance from

LABAT-ANDERSON, INCORPORATED
1111 North 19th Street, Suite 2200 ■ Arlington, Virginia 22209 ■ (703) 525-9400

ABERDEEN PESTICIDE DUMPS
NPL SITE ADMINISTRATIVE RECORD

Table of Contents

Volume I

- 1.0 PRE-REMEDIAL
  - 1.2 Preliminary Assessment
  - 1.3 Site Inspection

Volume II

  - 1.3 Site Inspection (cont'd.)
  - 1.6 Correspondence Related to Proposal of a Site to the NPL
- 2.0 REMOVAL RESPONSE
  - 2.1 Correspondence
  - 2.2 Removal Response Reports
  - 2.3 Sampling and Analysis Data

Volume III

  - 2.3 Sampling and Analysis Data (cont'd.)

Volume IV

  - 2.3 Sampling and Analysis Data (cont'd.)

Volume V

  - 2.3 Sampling and Analysis Data (cont'd.)
  - 2.4 Pollution Reports (POLREPs)
  - 2.5 On-Scene Coordinator Reports

Volume VI

  - 2.5 On-Scene Coordinator Reports (cont'd.)

Volume VII

  - 2.5 On-Scene Coordinator Reports (cont'd.)

Table of Contents (cont'd.)

Volume VIII

- 2.5 On-Scene Coordinator Reports (cont'd.)
- 2.6 Work Plans and Progress Reports
- 2.9 Action Memoranda
- 2.11 Applicable or Relevant and Appropriate Requirements (ARARs)

Volume IX

3.0 REMEDIAL INVESTIGATION (RI)

- 3.9 Health Assessments

10.0 ENFORCEMENT

- 10.3 State and Local Enforcement Records

11.0 POTENTIALLY RESPONSIBLE PARTIES (PRP)

- 11.10 PRP-Specific Correspondence
- 11.13 PRP Related Documents

13.0 COMMUNITY RELATIONS

- 13.1 Correspondence
- 13.2 Community Relations Plans
- 13.3 News Clippings/Press Releases
- 13.4 Public Meetings

14.0 CONGRESSIONAL RELATIONS

- 14.1 Correspondence

15.0 FREEDOM OF INFORMATION ACT (FOIA) MANAGEMENT

- 15.2 Requests

17.0 SITE MANAGEMENT RECORDS

- 17.4 Site Photographs/Maps

Index

INTRODUCTION

This document is the Index to the Administrative Record for the Aberdeen Pesticide Dumps National Priorities List (NPL) site.

The Administrative Record is available for public review at EPA Region IV's Office in Atlanta, Georgia, and at Aberdeen Town Hall, 105 South Sandhills Boulevard, Aberdeen, North Carolina 28315.

Questions concerning the Administrative Record should be addressed to the EPA Region IV site manager.

The Administrative Record is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA).

Section I

Site-Specific Documents

ADMINISTRATIVE RECORD INDEX
for the
ABERDEEN PESTICIDE DUMPS NPL Site

1.0 PRE-REMEDIAL

1.2 Preliminary Assessment

1. "Potential Hazardous Waste Site - Preliminary Assessment" Form, O.W. Strickland, State of North Carolina Department of Human Resources (October 24, 1984). Concerning the Aberdeen Pesticide Dumps Twin Sites.
2. "Potential Hazardous Waste Site - Preliminary Assessment" Form, O.W. Strickland, State of North Carolina Department of Human Resources (October 25, 1984). Concerning the Aberdeen Pesticide Dumps Fairway Six Site.
3. "Potential Hazardous Waste Site - Preliminary Assessment" Form, Lee Crosby, State of North Carolina Department of Human Resources (January 10, 1985). Concerning the Aberdeen Pesticide Dumps Site McIver Pesticide Drum Site.
4. "Potential Hazardous Waste Site - Preliminary Assessment" Form, Mary Giguere and Grover Nicholson, State of North Carolina Department of Human Resources, with Attachments (July 2, 1985). Concerning the Aberdeen Pesticide Dumps Site Farm Chemicals Site.
5. "Potential Hazardous Waste Site - Preliminary Assessment" Form, Mary Giguere and Grover Nicholson, State of North Carolina Department of Human Resources (July 3, 1985). Concerning the Aberdeen Pesticide Dumps Site Howe Industries Site.
6. "Potential Hazardous Waste Site - Preliminary Assessment" Form, Pat DeRosa, State of North Carolina Department of Human Resources. (July 19, 1985). Concerning the Aberdeen Pesticide Dumps Site Rt. 211 Pesticide Site.

1.3 Site Inspection

1. "Site Inspection Report - NC D980843346 - Aberdeen Pesticides Twin Sites," D. Mark Durway, State of North Carolina Department of Human Resources (March 28, 1985).
2. "Site Inspection Report - NC D980843403 - Aberdeen Pesticides Fairway Six Site," D. Mark Durway, State of North Carolina Department of Human Resources (April 2, 1985).
3. "Site Inspection Report - NC D980844468 - McIver Pesticide Site," Grover Nicholson, State of North Carolina Department of Human Resources (April 18, 1985).

1.3 Site Inspection (cont'd.)

4. Letter from Grover Nicholson and D. Mark Durway, State of North Carolina Department of Human Resources, to Denise Bland, EPA Region IV (April 24, 1985). Concerning the Site Investigation Reports for the Aberdeen Pesticide Dumps Fairway Six, Twin, and McIver Pesticide Drum Sites.
5. "Rt. 211 Pesticide Aberdeen Site - NC D981030679 - Aberdeen, NC," Pat DeRosa, State of North Carolina Department of Human Resources (August 27, 1985).

1.6 Correspondence Related to Proposal of a Site to the NPL

1. Letter from Melanie McDonald, League of Women Voters of Moore County, to Russel Wyer, EPA Headquarters (February 19, 1987). Concerning inclusion of the Aberdeen Pesticide Dumps Site on the National Priorities List.
2. Letter from Clement Fairleath, Citizen, to Russel Wyer, EPA Headquarters (March 5, 1987). Concerning the inclusion of the Aberdeen Pesticide Dumps Site on the National Priorities List.
3. Letter from Thomas Desmond, Citizen, to Russel Wyer, EPA Headquarters (March 11, 1987). Concerning the need for EPA Region IV to cleanup the buried pesticides in the Aberdeen area.

2.0 REMOVAL RESPONSE

2.1 Correspondence

1. Letter from Lee Mittelstadt, State of North Carolina Department of Human Resources, to Norton Jessup, EPA Region IV (May 20, 1985). Concerning transmittal of a form letter sent to people interested in the current status of the Aberdeen Pesticide Dumps Site.
2. Memorandum from Chuck Pietrosewicz, Agency for Toxic Substances and Disease Registry, to Norton Jessup, EPA Region IV (May 28, 1985). Concerning recommendations from Dr. Frank Mitchell, Centers for Disease Control Superfund Implementation Group, regarding the Aberdeen Pesticide Dumps Site.
3. Letter from Lee Mittelstadt, State of North Carolina Department of Human Resources, to Terry Dover, State of North Carolina Department of Human Resources (June 6, 1985). Concerning EPA Region IV action at the Aberdeen Pesticide Dumps Site.
4. Letter from William Meyer, State of North Carolina Department of Human Resources, to Norton Jessup, EPA Region IV (May 13, 1986). Concerning receipt of notification of Federal action at the Farm Chemical Site.

2.1 Correspondence (cont'd.)

5. Memorandum from Norton Jessup, EPA Region IV, to Jerry Rhodes, State of North Carolina Department of Human Resources (June 1, 1986). Concerning notification of Federal action at the Aberdeen Pesticide Dumps Site.
6. Memorandum from James Wilburn, EPA Region IV, to Norton Jessup, EPA Region IV (July 10, 1986). Concerning EPA Region IV Air Compliance Branch comments on the upcoming test burn at the Aberdeen Pesticide Dumps Site.
7. Memorandum from Gail Mitchell, EPA Region IV, to Jim Orban, Eve Zimmerman, and Norton Jessup, EPA Region IV (November 20, 1986). Concerning blending of water from individual supply wells.
8. Telephone Notes Between Ken Orloff, EPA Region IV, and Ted Taylor, North Carolina Department of Human Resources (November 20, 1986). Concerning lindane contamination of groundwater at the Aberdeen Pesticide Dumps Site.
9. Memorandum from Norton Jessup, EPA Region IV, to Jerry Rhodes, State of North Carolina Department of Human Resources (November 24, 1986). Concerning notification of Federal action at the Aberdeen Pesticide Dumps Site.
10. Memorandum from John Mann, EPA Region IV, to Russell Wright, EPA Region IV (December 2, 1986). Concerning current issues and developments at the Aberdeen Pesticide Dumps Site.
11. Memorandum from Norton Jessup, EPA Region IV, to Jerry Rhodes, State of North Carolina Department of Human Resources (March 4, 1987). Concerning notification of Federal action at the Aberdeen Pesticide Dumps Site.
12. Telephone Notes Between Chuck Pietrosewicz, Agency for Toxic Substances and Disease Registry, and Mark McClanahan, Agency for Toxic Substances and Disease Registry (March 11, 1987). Concerning the need for an exposure survey of residents in the area of the Aberdeen Pesticide Dumps Site.
13. Memorandum from Chuck Pietrosewicz, Agency for Toxic Substances and Disease Registry, to Norton Jessup, EPA Region IV (October 5, 1987). Concerning analysis of water samples from the Aberdeen Pesticide Dumps Site.
14. Memorandum from Christopher Provost, EPA Region IV, to Norton Jessup, EPA Region IV (October 14, 1987). Concerning attached letter from M.J. Noland, State of North Carolina, Department of Natural Resources suggesting EPA Region IV investigate additional pesticide dumps in the City of Aberdeen.
15. Letter from Samuel Fields, County of Moore Health Department, to Norton Jessup, EPA Region IV (June 22, 1988). Concerning progress at the Aberdeen Pesticide Dumps Site.

2.1 Correspondence (cont'd.)

16. Letter from Patrick Tobin, EPA Region IV, to William Meyer, State of North Carolina Department of Human Resources (July 13, 1988). Concerning EPA Region IV plans for the upcoming Removal action at the Aberdeen Pesticide Dumps Site.

2.2 Removal Response Reports

1. "Pesticide Dumps Profile Sheet - Aberdeen, NC," Norton Jessup, EPA Region IV (May 6, 1985).
2. "US EPA Region IV - Safety Plan - Aberdeen Pesticide Site - Aberdeen, North Carolina," Thomas Hatton, Roy F. Weston, Inc. (June 10, 1985).
3. "Engineering Evaluation/Cost Analysis for Aberdeen Pesticide Site - Aberdeen, North Carolina," Johnny Udo, Roy F. Weston, Inc. (July 10, 1987).
4. "Risk Assessment for Aberdeen Pesticide Site - Aberdeen, North Carolina," Roy F. Weston, Inc. (March 14, 1988).

2.3 Sampling and Analysis Data

1. Letter from Lee Crosby, State of North Carolina Department of Human Resources, to Joel Veater, EPA Region IV (October 16, 1985). Concerning the attached laboratory analyses of wells located at Powder Metal Products and Aberdeen Sand and Gravel.
2. Letter from Charles Rundgren, State of North Carolina Department of Human Resources, to Robert Jourdan, EPA Region IV (February 26, 1986). Concerning the attached results of analyses of water samples from the City of Aberdeen.
3. Memorandum from J.A. Williams, Roy F. Weston, Inc., to Clyde Johnson, Roy F. Weston, Inc. (June 13, 1986). Concerning results of the Ground Penetrating Radar Field Investigation at the Farm Chemical Facility in Aberdeen, North Carolina.
4. Well Sampling Data, State of North Carolina Department of Human Resources (July 1986 through February 1987).
5. "Vesta Technology, Ltd. - M & S Engineering & Manufacturing Company - Mobile Incineration System - RCRA Trial Burn Plan - Including Quality Assurance/ Quality Control Plan," Recon Systems, Inc., for Vesta Technology, Ltd. (July 14, 1986).
6. "Report of Geophysical Survey and Sampling Activities at the Farm Chemical Site, Aberdeen, North Carolina," Roy F. Weston, Inc. (July 18, 1986).
7. Memorandum from Patrick Tobin, EPA Region IV, to Jack Ravan, EPA Region IV (September 19, 1986). Concerning the test burn of pesticides at the Aberdeen Pesticide Dumps Site.

2.3 Sampling and Analysis Data (cont'd.)

8. Memorandum from Charles Till, EPA Region IV, to Norton Jessup, EPA Region IV (December 22, 1986). Concerning the attached analytical results from samples collected from five wells in the Aberdeen well field.
9. Memorandum from Paul Reinermann, EPA Region IV, to Norton Jessup, EPA Region IV (January 5, 1987). Concerning observation of the trial burn test at the Aberdeen Pesticide Dumps Site.
10. "Stack Sampling Report," Recon Systems Inc. for Vesta Technology, Ltd. (January 12, 1987).
11. "Pesticides Incineration Site - Aberdeen, North Carolina," Enviresponse, Inc. (January 30, 1987).
12. Memorandum from David Charters, EPA Emergency Response Team, to Norton Jessup, EPA Region IV (March 16, 1987). Concerning the attached sample Well Inventory Sheet.
13. Well Sampling Data, International Technology Corporation (April 30, 1987).
14. Memorandum from Philip Campagna, EPA Emergency Response Team, to Norton Jessup, EPA Region IV (September 23, 1987). Concerning the Air Monitoring Plan for the Aberdeen Pesticide Dumps Site.
15. Well Sampling Data, State of North Carolina Department of Human Resources (October 22, 1987).
16. Letter from Christopher Provost, EPA Region IV, to John Boothe, Wellowner (February 11, 1988). Concerning results of well sampling conducted on November 3, 1987 in the City of Aberdeen, State of North Carolina.
17. Letter from Christopher Provost, EPA Region IV, to Matt Davis, Wellowner (February 11, 1988). Concerning results of well sampling conducted on November 3, 1987 in the City of Aberdeen, State of North Carolina.
18. Letter from Christopher Provost, EPA Region IV, to John Demolet, Wellowner (February 11, 1988). Concerning results of well sampling conducted on November 3, 1987 in the City of Aberdeen, State of North Carolina.
19. Letter from Christopher Provost, EPA Region IV, to Ken Mahotz, Wellowner (February 11, 1988). Concerning results of well sampling conducted on November 3, 1987 in the City of Aberdeen, State of North Carolina.
20. Letter from Christopher Provost, EPA Region IV, to Mae McCracken, Wellowner (February 11, 1988). Concerning results of well sampling conducted on November 3, 1987 in the City of Aberdeen, State of North Carolina.
21. Letter from Christopher Provost, EPA Region IV, to James Ritter, Wellowner (February 11, 1988). Concerning results of well sampling conducted on November 3, 1987 in the City of Aberdeen, State of North Carolina.

2.3 Sampling and Analysis Data (cont'd.)

22. Letter from Christopher Provost, EPA Region IV, to Jim Smith, Lebanon Chemical (February 11, 1988). Concerning results of well sampling conducted on November 3, 1987 in the City of Aberdeen, State of North Carolina.
23. Letter from Christopher Provost, EPA Region IV, to Charles Wimberly, City of Aberdeen (February 11, 1988). Concerning results of well sampling conducted on November 3, 1987 in the City of Aberdeen, State of North Carolina.
24. Well Sampling Data, State of North Carolina Department of Human Resources (April 18, 1988).
25. "Solidification Evaluation - Aberdeen Pesticide Site - Aberdeen, Moore County, North Carolina," Andrew Roberts, Roy F. Weston, Inc. (May 13, 1988).
26. "Sampling Plan for Aberdeen (Fairway Six) Pesticide Site - Aberdeen, Moore County, North Carolina," Roy F. Weston, Inc. (July 19, 1988).

2.4 Pollution Reports (POLREPs)

1. Electronic Mail Message from Norton Jessup, EPA Region IV, to Tim Fields, EPA Headquarters, and George Moein, EPA Region IV (July 3, 1985). Concerning the need to assess the Aberdeen Pesticide Dumps Site for more Superfund funding.
2. Electronic Mail Message from Norton Jessup, EPA Region IV, to Jack Stanton, EPA Headquarters, and George Moein, EPA Region IV (August 18, 1986). Concerning accomplishments at the Aberdeen Pesticide Dumps Site.
3. Electronic Mail Message from Norton Jessup, EPA Region IV, to Tim Fields, EPA Headquarters, and George Moein, EPA Region IV (March 20, 1987). Concerning recent activities at the Aberdeen Pesticide Dumps Site.

2.5 On-Scene Coordinator Reports

1. "Aberdeen Pesticide Site - Aberdeen, North Carolina," Roy F. Weston, Inc. (June 1985).
2. "OSC Report - Aberdeen Pesticide Site - Aberdeen, NC," Norton Jessup, EPA Region IV (June 1985).
3. "Aberdeen Pesticide Removal - Aberdeen, Moore County, North Carolina - Volume 1," O.H. Materials (December 1988).
4. "Aberdeen Pesticide Removal - Aberdeen, Moore County, North Carolina - Volume 2," O.H. Materials (December 1988).
5. "Aberdeen Pesticide Removal - Aberdeen, Moore County, North Carolina - Volume 3," O.H. Materials (December 1988).

2.5 On-Scene Coordinator Reports (cont'd.)

6. "Aberdeen Pesticide Removal - Aberdeen, Moore County, North Carolina - Volume 4," O.H. Materials (December 1988).
7. "Aberdeen Pesticide Removal - Aberdeen, Moore County, North Carolina - Volume 5," O.H. Materials (December 1988).

2.6 Work Plans and Progress Reports

1. Field Notes, Thomas Hatton, Roy F. Weston, Inc. (June 10, 1985 through July 3, 1985).
2. Field Notes, Clyde Johnson, Roy F. Weston, Inc. (May 14, 1986 through May 16, 1986).
3. Field Notes, Clyde Johnson, Roy F. Weston, Inc. (August 16, 1986 through August 18, 1986).
4. Letter from Patrick Phillips, Vesta Technology, Ltd., to Norton Jessup, EPA Region IV (December 16, 1986). Concerning the trial burn at the Aberdeen Pesticide Dumps Site.

2.9 Action Memoranda

1. Memorandum from Norton Jessup, EPA Region IV, to Jack Ravan, EPA Region IV (June 3, 1985). Concerning an immediate removal request for the Aberdeen Pesticide Dumps Site.
2. Memorandum from Jack Ravan, EPA Region IV, to Jack McGraw, EPA Headquarters (July 19, 1985). Concerning continuation of removal activities at the Aberdeen Pesticide Dumps Site.
3. Memorandum from Norton Jessup, EPA Region IV, to Jack Ravan, EPA Region IV (May 29, 1986). Concerning a ceiling increase request for the immediate removal action at the Aberdeen Pesticide Dumps Site.
4. Memorandum from Norton Jessup, EPA Region IV, to Jim Wilburn, EPA Region IV and Fin Johnson, State of North Carolina Department of Human Resources (June 27, 1986). Concerning Federal and State Air Compliance concurrence on the air emissions permit exemption for the test burn at the Aberdeen Pesticide Dumps Site.
5. Memorandum from Norton Jessup, EPA Region IV, to John Dickinson, EPA Region IV, and Bill Hamner, State of North Carolina Department of Human Resources (June 27, 1986). Concerning Federal and State RCRA Compliance concurrence on the Treatment, Storage, or Disposal permit exemption for the test burn at the Aberdeen Pesticide Dumps Site.
6. Memorandum from Jack Ravan, EPA Region IV, to J. Winston Porter, EPA Headquarters (July 22, 1986). Concerning a ceiling increase request for continuation of removal actions at the Aberdeen Pesticide Dumps Site.

2.9 Action Memoranda (cont'd.)

7. Memorandum from Lee DeHihns, EPA Region IV, to J. Winston Porter, EPA Headquarters (October 9, 1987). Concerning a ceiling increase request for on-site incineration at the Aberdeen Pesticide Dumps Site.
8. Memorandum from Timothy Field, EPA Headquarters, to J. Winston Porter, EPA Headquarters (January 15, 1988). (CONFIDENTIAL).

2.11 Applicable or Relevant and Appropriate Requirements (ARARs)

1. Letter from R. Paul Wilms, State of North Carolina Department of Natural Resources and Community Development, to Jack Ravan, EPA Region IV (July 9, 1986). Concerning State authorization of and requirements for the test burn at the Aberdeen Pesticide Dumps Site.
2. Letter from Jack Ravan, EPA Region IV, to R. Paul Wilms, State of North Carolina Department of Natural Resources and Community Development (August 1, 1986). Concerning Mr. Wilms letter of July 9, 1986.
3. Letter from R. Paul Wilms, State of North Carolina Department of Natural Resources and Community Development, to Jack Ravan, EPA Region IV (August 14, 1986). Concerning conditions for State authorization of the test burn at the Aberdeen Pesticide Dumps Site.
4. Letter from Jack Ravan, EPA Region IV, to R. Paul Wilms, State of North Carolina Department of Natural Resources and Community Development (September 9, 1986). Concerning Mr. Wilms letter of August 14, 1986.
5. Letter from Norton Jessup, EPA Region IV, to Ogden Gerald, State of North Carolina Department of Natural Resources and Community Development (December 3, 1986). Concerning a request for a time extension for the test burn at the Aberdeen Pesticide Dumps Site.
6. Letter from R. Paul Wilms, State of North Carolina Department of Natural Resources and Community Development, to Jack Ravan, EPA Region IV (December 3, 1986). Concerning modified conditions for State authorization of the test burn at the Aberdeen Pesticide Dumps Site.
7. Letter from Ogden Gerald, State of North Carolina Department of Natural Resources and Community Development, to Norton Jessup, EPA Region IV, with Attachments (March 24, 1987). Concerning the attached Air Permit Application relating to the construction and operation of an incinerator at the Aberdeen Pesticide Dumps Site.
8. Letter from Tricia Jack, Vesta Technology, Ltd., to Norton Jessup, EPA Region IV (August 12, 1987). Concerning the need to provide Richard Lasater of the State of North Carolina Department of Natural Resources and Community Development with a copy of the Risk Assessment.

3.0 REMEDIAL INVESTIGATION (RI)

3.9 Health Assessments

1. "Preliminary Health Assessment for Aberdeen Pesticide Dumps - Aberdeen, North Carolina," Agency for Toxic Substances and Disease Registry (September 29, 1988).

10.0 ENFORCEMENT

10.3 State and Local Enforcement Records

1. State of North Carolina, Department of Human Resources, Department of Agriculture, Administrative Order on Consent, In Re: Farm Chemicals, Inc., Bill Luck and Luck's Construction Co. (February 1, 1985).
2. "Chronology of Events - Administrative Order on Consent, In Re: Farm Chemicals, Inc., Bill Luck and Luck's Construction Co.," State of North Carolina Department of Human Resources (May 1, 1985).

11.0 POTENTIALLY RESPONSIBLE PARTIES (PRP)

11.10 PRP-Specific Correspondence

1. Letter from Thomas W. Devine, EPA Region IV, to Mayor, City of Aberdeen (May 15, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
2. Letter from Thomas W. Devine, EPA Region IV, to Alfred Leach, Farm Chemicals, Inc. (May 15, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
3. Letter from Thomas W. Devine, EPA Region IV, to Dan Farrell, Property Owner (May 15, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
4. Letter from Thomas W. Devine, EPA Region IV, to Bill Luck, Luck's Construction Co. (May 15, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
5. Letter from Thomas W. Devine, EPA Region IV, to Dan Maples, Property Owner (May 15, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
6. Letter from Thomas W. Devine, EPA Region IV, to Ruth Monroe, Property Owner (May 15, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.

11.10 PRP-Specific Correspondence (cont'd.)

7. Letter from Thomas W. Devine, EPA Region IV, to Riddle, Floyd, and Godwin (May 15, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
8. Letter from Thomas W. Devine, EPA Region IV, to Jack Taylor, Taylor Chemical Co. (May 15, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
9. Letter from Thomas W. Devine, EPA Region IV, to Thomas Wood, Property Owner (May 15, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
10. Letter from J. Allen Harrington, Harrington & Gilleland (Attorney for the Estate of Dan Farrell) to Giezelle Bennett, EPA Region IV (May 21, 1985). Concerning Thomas Devine's letter of May 15, 1985, to Dan Farrell.
11. Letter from Bill Luck, Luck's Construction Co., to Giezelle Bennett, EPA Region IV (May 21, 1985). Concerning Thomas Devine's letter of May 15, 1985.
12. Letter from R. Palmer Willcox, Willcox & McFadyen (Attorney for Farm Chemicals, Inc.), to Giezelle Bennett, EPA Region IV (May 23, 1985). Concerning Thomas Devine's letter of May 15, 1985, to Alfred Leach, Farm Chemicals, Inc.
13. Letter from O. Tracy Parks, III, McDermott & Parks (Attorney for Dan Maples) to Giezelle Bennett, EPA Region IV (May 23, 1985). Concerning Thomas Devine's letter of May 15, 1985, to Dan Maples.
14. Letter from Robert N. Page, III, Page, Neville and Dedmond (Attorney for Ruth Monroe), to Giezelle Bennett, EPA Region IV (May 23, 1985). Concerning Thomas Devine's letter of May 15, 1985, to Ruth Monroe.
15. Letter from Robert N. Page, III, Page, Neville and Dedmond (Attorney for Jack Taylor), to Giezelle Bennett, EPA Region IV (May 23, 1985). Concerning Thomas Devine's letter of May 15, 1985, to Jack Taylor.
16. Memorandum from Lee Crosby, EPA Region IV, to File (June 20, 1985). (CONFIDENTIAL).
17. Memorandum from Mary Giguere, State of North Carolina Department of Human Resources, to File (July 2, 1985). (CONFIDENTIAL).
18. Meeting Notes, Mary Giguere, State of North Carolina Department of Human Resources, Farm Chemicals, Inc., and Howe Industries (July 2, 1985). (CONFIDENTIAL).
19. Memorandum from Mary Giguere, State of North Carolina Department of Human Resources, to File (July 5, 1985). (CONFIDENTIAL).

11.10 PRP-Specific Correspondence (cont'd.)

20. Letter from Thomas W. Devine, EPA Region IV, to Forrest Lockey, Jr., Property Owner (September 30, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
21. Letter from Thomas W. Devine, EPA Region IV, to Martin-Marietta Corp. (September 30, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
22. Letter from Thomas W. Devine, EPA Region IV, to Jack Taylor, Taylor Chemical Co. (September 30, 1985). Concerning notice of potential liability for costs incurred by the government in taking corrective actions at the Aberdeen Pesticide Dumps Site.
23. Letter from Robert N. Page, III, Page, Neville and Dedmond (Attorney for Jack Taylor), to Mike Norman, EPA Region IV (October 4, 1985). Concerning Thomas Devine's letter of September 30, 1985, to Jack Taylor.
24. Letter from Forrest Lockey, Jr., Property Owner, to Mike Norman, EPA Region IV (October 9, 1985). Concerning Thomas Devine's letter of September 30, 1985.

11.13 PRP Related Documents

1. "Taylor Chemical Company Denies Keith's Property Damage Allegations," The Sandhill Citizen - Aberdeen, NC (July 28, 1949).
2. "On Press - a Top Reporter's Life in, and Reflections on, American Journalism," Tom Wicker (1978). Concerning allegations made in 1949 that Taylor Chemical Company was producing a fallout of dust that was dangerous to workers and families living nearby.

13.0 COMMUNITY RELATIONS

13.1 Correspondence

1. **Cross-Reference: Letter from Melanie McDonald, League of Women Voters of Moore County, to Russel Wyer, EPA Headquarters (February 19, 1987). Concerning inclusion of the Aberdeen Pesticide Dumps Site on the National Priorities List. [Filed and cited as entry number 1 in 1.6 Correspondence Related to Proposal of a Site to the NPL].**
2. Cross-Reference: Letter from Clement Fairleath, Citizen, to Russel Wyer, EPA Headquarters (March 5, 1987). Concerning the inclusion of the Aberdeen Pesticide Dumps Site on the National Priorities List. [Filed and cited as entry number 2 in 1.6 Correspondense Related to Proposal of Site to the NPL].

13.1 Correspondence (cont'd.)

3. Cross-Reference: Letter from Thomas Desmond, Citizen, to Russel Wyer, EPA Headquarters (March 11, 1987). Concerning the need for the EPA to cleanup the buried pesticide dumps in the Aberdeen area. [Filed and cited as entry number 3 in 1.6 Correspondence Related to Proposal of a Site to the NPL].
4. Letter from Christopher Provost, EPA Region IV, to Sam Greenwood, City of Aberdeen (July 21, 1987). Concerning the Availability Session held recently at Aberdeen Railroad Depot.
5. Letter from Christopher Provost, EPA Region IV, to Sam Greenwood, City of Aberdeen (May 12, 1988). Concerning community interviews about the Aberdeen Pesticide Dumps Site.
6. Letter from Christopher Provost, EPA Region IV, to Claudia Madeley, The Sandhill Citizen and News Outlook (May 12, 1988). Concerning community interviews about the Aberdeen Pesticide Dumps Site.
7. Letter from Christopher Provost, EPA Region IV, to Melanie McDonald, Citizen (May 12, 1988). Concerning community interviews about the Aberdeen Pesticide Dumps Site.
8. Letter from Christopher Provost, EPA Region IV, to Maureen D. Sutton, Citizen (May 12, 1988). Concerning community interviews about the Aberdeen Pesticide Dumps Site.
9. Letter from Christopher Provost, EPA Region IV, to Jesse Wimberly, Citizen (May 12, 1988). Concerning community interviews about the Aberdeen Pesticide Dumps Site.
10. Letter from Christopher Provost, EPA Region IV to Sam Greenwood, City of Aberdeen (May 18, 1988). Concerning identification of Aberdeen Town Hall as repository of information on the Aberdeen Pesticide Dumps Site.

13.2 Community Relations Plans

1. "Final Community Relations Plan for the Aberdeen Pesticide Dumps Site, Aberdeen, North Carolina," Williams-Russell and Johnson, Inc. (May 1988).
2. Letter from Christopher Provost, EPA Region IV, to William L. Meyer, State of North Carolina Department of Human Resources (May 18, 1988). Concerning transmittal of the "Final Community Relations Plan for the Aberdeen Pesticide Dumps Site, Aberdeen, North Carolina," Williams-Russell and Johnson, Inc.

84

13.3 News Clippings/Press Releases

1. "Dr. Mobbs Statement on BHC Leads to Widespread Comment," The Sandhill Citizen - Aberdeen, NC (May 12, 1949).
2. "EPA Begins Hazardous Waste Cleanup Work," The Sandhill Citizen and News Outlook - Aberdeen, NC (June 12, 1985).
3. "EPA Dump Cleanup Found Twice as Big," The Sandhill Citizen and News Outlook - Aberdeen, NC (July 1985).
4. "More Aberdeen Waste is Being Cleaned Up," The Pilot - Southern Pines, NC (July 1985).
5. "EPA Cleanup May Cost More Than $1 Million," The Sandhill Citizen and News Outlook - Aberdeen, NC (July 3, 1985).
6. "EPA Returns to Aberdeen Waste Sites," The Citizen News-Record - Aberdeen, NC (May 14, 1986).
7. "EPA Finds New Toxic Waste Site," The Citizen News-Record - Aberdeen, NC (May 19, 1986).
8. "EPA Test Chemical Burn Tentatively Set to Take Place in Area," The Citizen News-Record - Aberdeen, NC (June 13, 1986).
9. "Environmental News," EPA Region IV (June 20, 1988). Concerning the availability of materials from the Aberdeen Pesticide Dumps Site for citizen review.

13.4 Public Meetings

1. EPA Region IV Meeting Notes, Regional Response Team Meeting (June 11, 1986).
2. EPA Region IV Attendance List, Regional Response Team Meeting (March 12, 1987).
3. Letter from Phyllis Kalk, League of Women Voters of Moore County, to Christopher Provost, EPA Region IV (June 28, 1988). Concerning the planning of a public forum with Christopher Provost in Aberdeen in late July, 1988.
4. Letter from Christopher Provost, EPA Region IV, to Phyllis Kalk, League of Women Voters of Moore County (July 11, 1988). Concerning an availability session to be held in City of Aberdeen on July 18, 1988.
5. Memorandum from Christopher Provost, EPA Region IV, to File (July 22, 1988). Concerning the availability session held in the City of Aberdeen on July 18, 1988.

14.0 CONGRESSIONAL RELATIONS

14.1 Correspondence

1. Letter from William L. Meyer, State of North Carolina Department of Human Resources, to Charles Rose, III, Member of the U.S. House of Representatives (April 25, 1988). Concerning telephone request for information on the Aberdeen Pesticide Dumps Site.

14.1 Correspondence (cont'd.)

2. Letter from Charles Rose,III, Member of the U.S. House of Representatives, to Greer C. Tidwell, EPA Region IV (August 26, 1988). Concerning information on how the Aberdeen Pesticide Dumps Site was proposed for inclusion on the National Priorities List.
3. Letter from Greer Tidwell, EPA Region IV, to Charles Rose, III, Member of the U.S. House of Representatives. (September 9, 1988). Concerning response to August 26, 1988 letter inquiring about the inclusion of the Aberdeen Pesticide Dumps Site on the National Priorities List.

15.0 FREEDOM OF INFORMATION ACT (FOIA) MANAGMENT

15.2 Requests

1. Letter from Philip Reeker, Cleary, Gottlieb, Steen & Hamilton, to Gayle Alston, EPA Region IV (February 25, 1987). Concerning information contained in the Hazard Ranking Document for the Aberdeen Pesticide Dumps Site.

17.0 SITE MANAGEMENT RECORDS

17.4 Site Photographs/Maps

1. 7" X 10" Black and White Photograph of the Taylor Chemical Company Plant (1949).
2. "Map of Sandhills Area/Moore County, North Carolina," Sandhills Area Chamber of Commerce (1984).

Section II
Guidance Documents

GUIDANCE DOCUMENTS

EPA Guidance documents may be reviewed at EPA Region IV, Atlanta, Georgia.

General EPA Guidance Documents

1. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, amended October 17, 1986.

2. "Guidelines Establishing Test Procedures for the Analysis of Pollutants under the Clean Water Act; Final Rule and Interim Final Rule and Proposed Rule" (40 CFR Part 136), Federal Register, October 26, 1984.

3. Letter from Lee M. Thomas to James J. Florio, Chairman, Subcommittee on Consumer Protection and Competiveness, Committee on Energy and Commerce, U.S. House of Representatives, May 21, 1987 (discussing EPA's implementation of the Superfund Amendments and Reauthorization Act of 1986).

4. Memorandum from Gene Lucero to the U.S. Environmental Protection Agency, August 28, 1985 (discussing community relations at Superfund Enforcement sites).

5. Memorandum from J. Winston Porter to Addressees ("Regional Administrators, Regions I-X; Regional Counsel, Regions I-X; Director, Waste Management Division, Regions I, IV, V, VII, and VIII; Director, Emergency and Remedial Response Division, Region II; Director, Hazardous Waste Management Division, Regions III and VI; Director, Toxics and Waste Management Division, Region IX; Director, Hazardous Waste Division, Region X; Environmental Services Division Directors, Region I, VI, and VII"), July 9, 1987 (discussing interim guidance on compliance with applicable or relevant and appropriate requirements).

6. "National Oil and Hazardous Substances Pollution Contingency Plan," Code of Federal Regulations (Title 40, Part 300), 1985.

7. American Public Health Association, American Water Works Association, and Water Pollution Control Federation. Standard Methods for the Examination of Water and Wastewater. Washington: APHA, 1981.

8. Analytic Methods for Pesticides, Plant Growth Regulators, and Food Additives. New York: Academic Press, 1963-

9. U.S. Department of Health and Human Services. National Institute for Occupational Safety and Health. NIOSH Manual of Analytical Methods (NIOSH 77-157-A), 1977.

10. U.S. Department of Health and Human Services. National Institute for Occupational Safety and Health, and Occupational Safety and Health Administration. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, October 1985.

11. U.S. Environmental Protection Agency. Environmental Monitoring and Support Laboratory. *Methods for Chemical Analysis of Water and Wastes* (EPA-600/4-79-020), March 1983.

12. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. *Community Relations in Superfund: A Handbook (Interim Version)* (EPA/HW-6), September 1983.

13. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. *A Compendium of Superfund Field Operations Methods* (EPA/540/P-87/001, OSWER Directive 9355.0-14), December 1987.

14. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. *Guidance Document for Cleanup of Surface Tank and Drum Sites* (OSWER Directive 9380.0-3), May 28, 1985.

15. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. *Draft Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites* (OSWER Directive 9283.1-2), September 20, 1986.

16. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. *Personnel Protection and Safety*.

17. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Hazardous Response Support Division. *Standard Operating Safety Guides*, November 1984.

18. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. *Superfund Federal-Lead Remedial Project Management Handbook* (EPA/540/G-87/001, OSWER Directive 9355.1-1), December 1986.

19. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. *Superfund Public Health Evaluation Manual* (OSWER Directive 9285.4-1), October 1986.

20. U.S. EPA. Office of Ground-Water Protection. *Ground-Water Protection Strategy for the Environmental Protection Agency*, August 1984.

21. U.S. Environmental Protection Agency. Office of Research and Development. Hazardous Waste Engineering Research

Laboratory. Handbook: Remedial Action at Waste Disposal Sites (Revised) (EPA/625/6-85/006), October 1985.

22. U.S. Environmental Protection Agency. Office of Research and Development. Hazardous Waste Engineering Research Laboratory. Technology Briefs: Data Requirements for Selecting Remedial Action Technology (EPA/600/2-87/001), January 1987.

23. U.S. Environmental Protection Agency. Office of Research and Development. Hazardous Waste Engineering Research Laboratory. Treatment Technology Briefs: Alternatives to Hazardous Waste Landfills (EPA/600/8-86/017), July 1986.

24. U.S. Environmental Protection Agency. Office of Research and Development. Municipal Environmental Research Laboratory. Biodegradation and Treatability of Specific Pollutants (EPA-600/9-79-034), October 1979.

25. U.S. Environmental Protection Agency. Office of Research and Development. Municipal Environmental Research Laboratory. Carbon Adsorption Isotherms for Toxic Organics (EPA-600/8-80-023), April 1980.

26. U.S. Environmental Protection Agency. Office of Research and Development. Municipal Environmental Research Laboratory. Handbook for Evaluating Remedial Action Technology Plans (EPA-600/2-83-076), August 1983.

27. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Data Quality Objectives for Remedial Response Activities: Development Process (EPA/540/G-87/003), March 1987.

28. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Guidance on Feasibility Studies under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) (EPA/540/G-85/003), June 1985.

29. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Guidance on Remedial Investigations under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) (EPA/540/G-85/002), June 1985.

30. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Interim Guidance on Superfund Selection of Remedy (OSWER Directive 9355.0-19), December 24, 1986.

31. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Test Methods for Evaluation of Solid Waste: Physical/Chemical Methods (SW-846), July 1982-

32. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response and Office of Emergency and Remedial Response. Mobile Treatment Technologies for Superfund Wastes (EPA/540/2-86/003 (f)), September 1986.

33. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response, and Office of Research and Development. Review of In-Place Treatment Techniques for Contaminated Surface Soils - Volume 1: Technical Evaluation (EPA-540/2-84-003a), September 1984.